Safety Maintenance

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BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE. To obtain copies write in the key numbers on the free-postage card below.

MISCELLANEOUS

Unbreakable Laboratory Ware .. 257
General Scientific Equipment Co. This 24-page catalog covers light-weight, chemical-resistant, unbreakable laboratory ware made from polyethylene, polypropylene, polyurethane and polyvinyl plastic. Over 100 products are listed, including technical properties.

Safety Lighting Catalog 258
R. E. Dietz Co. Hazard warning and portable lighting is the subject of a new 20-page catalog, which covers flashers, lanterns and torches. Includes price list, specifications, plus use and maintenance tips.

Striped Warning Tape 259
W. H. Brady Co. This well-illustrated folder describes a versatile, easily-applied vinyl plastic tape of alternate yellow and black stripes. It illustrates numerous applications in industry to indicate knock-against or in-motion hazards, such as on plant vehicles, elevator gates, doorways, pillars, corners, etc.

Pendant Switch 260
Joy Mfg. Co., Electrical Products Div. A 6-button pendant switch is described in this bulletin. An overlay design gives the reader a quick "x-ray" view of the switch both inside and outside, including the switch wells, water seals, micro-type positive switches.

Construction Rubber Pails 261
Fortex Industries. A line of heavy-duty molded rubber pails, especially designed for the building and construction industry is described in this illustrated folder. An interesting series of pictures show how the crush-proof, non-breakable pails withstand construction uses as compared with metal pails.

Industrial Training Films 262
United World Films, Inc. "New Tools for Industry" is the title of this catalog of training films. The films are briefly described under general headings that include safety, engineering, care & use of hand tools, plastics, rocketry. Includes prices and order form.

Automatic Emergency Lighting .. 263
Electric Cord Co. Illustrated 8-page catalog offers a complete line of emergency lighting equipment that goes into operation automatically when regular lighting fails. Includes standard models of dry and wet cell battery types with single and multiple lamps, exit lights, extension lights and data on special equipment.

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FIRE PROTECTION

Fire Extinguishing Equipment ... 264
Ansul Chemical Co. This 1960 catalog covers hand extinguishers for all classes of fires (including metal fires) stationary fire equipment, piped systems, and mobile units. Featured are new dry chemical extinguishers of spherical design and stored pressure models. Includes accessories and recharging materials.

Fire Alarm Systems 265
Standard Electric Time Co. This illustrated 36-page catalog describes various types of fire alarm systems suitable for factories, public buildings, schools, hospitals. Conveniently indexed, it charts the types of applications for each system, the station and signal equipment, optional devices, and typical job specifications.

PLANT MAINTENANCE

Flooring Guide 266
The Monroe Co. Illustrated manual describes various flooring products for maintenance, repair, patching and resurfacing of interior and exterior floors. It shows how to do each job and shows what materials can be used.

Government Specifications for Coatings 267
Magic Chemical Co. This catalog lists 1000 U. S. government specifications covering adhesives, sealants, paints, cleaning compounds and chemical compounds. Useful for purchasing agents handling government contracts and also for commercial purchasers because of the wide range of maintenance products covered.

Tank Cleaning Equipment 268
Sellers Injector Corp. New bulletin describes method of cleaning entire inside surfaces of tanks of any size or shape, utilizing rotating jet nozzles which produce a powerful scrubbing action with solid streams of high temperature liquid. Can be used for process tanks, storage tanks, tank cars and tank trucks.

INDUSTRIAL HYGIENE

Air Sampling Equipment 269
Gelman Instrument Co. Methods of collecting and measuring aerosols and dusts from stacks and ducts are outlined in this pamphlet which also gives instructions on standard methods for evaluating dust concentrations in work areas. A useful bulletin for companies handling toxic or radioactive materials, mines and other industries where air contamination is a hazard or problem.

(Continued on the next page)

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Free Bulletins (Cont'd)

Mouth-To-Mask Resuscitator 270

Globe Industries, Inc. An emergency resuscitation device is described in this illustrated bulletin. Utilizing the principle of the new, approved mouth-to-mouth method, the mask and tube device with its exhaled-air control valve overcomes the hygienic objections to direct contact between rescuer and victim.

Filter Cloth Comparison Chart .. 271

Wheelabrator Corp. This handy comparison chart serves as a guide to the selection of filter cloths commonly used in dust and fume collectors. Cotton, nylon, dacron, orlon and silicone-treated glass are classified according to temperature limits, strength, resistance to chemicals and abrasion, and relative cost.

PERSONAL PROTECTION

Welding Helmets 272

Sellstrom Mfg. Co. A line of fibre glass welding helmets are featured in this illustrated bulletin, including data on the new nylon lift-front and stationary plate retainers and ratchet headgear. Also has information on replacement plates for the helmets.

Respirator Dust Filter 273

Pulmosan Safety Equipment Corp. This bulletin describes a new type of filter medium approved for all dusts not more toxic than lead. It gives data on the more efficient service offered by the new filter and lists the respirators with which the filter can be used.

Universal-Fit Safety Spectacle .. 274

U. S. Safety Service Co. Bulletin gives construction details on a new safety spectacle whose one bridge-size will fit the great majority of employees. Drawings and photographs show the three lens sizes, four temple styles, and three sideshields available. Includes prices for clear and colored safety lens models.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the preceding page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

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101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti-Fogging Equipment
104	Sweat Band
106	Respirators & Masks
107	Protective Clothing
108	Women's Protective Clothing
109	Safety Belts
110	Safety Gloves
112	Anti-Slip Soles
113	Oil-Resistant Soles
114	Welding Helmets
	FIRST AID AND HYGIENE
121	Skin Cleansers
122	Sanitary Drinking Facilities
123	Wash-up Facilities
124	Salt Tablets
125	Resuscitator Tubes
126	Antiseptic Medication
127	Burn Medication
128	First Aid Kits & Supplies
129	Stretchers & Litters
130	Throat Medication
131	Eye Wash Fountains
132	Portable Ventilators
133	Dust Collectors
135	Hearing Protectors
	FIRE PROTECTION
140	Fire Extinguishers
141	Safety Cans
142	Fire Alarms
143	Safer Solvents
144	Degreasing Machines
145	Drum Safety Valve
146	Asbestos Textiles
147	Incinerators
148	Watchmen's Control Systems
149	Fire Blankets

Key Number	Subject
	LIGHTING AND WARNING DEVICES
150	Alarms & Warning Lights
151	Powered Megaphones
153	Fluorescent Lamp Guards
154	Emergency Lights
	MAINTENANCE
161	Anti-Slip Waxes & Finishes
162	Floor Cleaning Compounds
163	Floor Cleaning Machines
169	Toilet Sanitizers
	LADDERS & HANDLING
170	Ladders
171	Ladder Safety Devices
172	Scaffolds
173	Work Platforms
177	Carboy Pumps
178	Machine Guards
	GUARDS
179	Power Press Feeders
180	Safety Tools
181	Vacuum Sheet Lifters
182	Valve Operators
184	Safety Lock-Outs
	EDUCATIONAL AIDS
191	Safety Signs
192	Safety Awards & Emblems
193	Employee Safety Guide
195	Changeable Letter Signs

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Publication Office:
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Safety Maintenance

formerly "SAFETY ENGINEERING"

Volume 119, Number 2 **February, 1960**

EDITORIAL

Laughs That Backfire 4

ACCIDENT PREVENTION

Training the Plant Civil Defense Corps by ARTHUR W. HARRIGAN 9
Do Safety Shoes Really Save? by CLIFFORD F. BURRIS 11
Industrial Trucks Designed for Safety (materials handling series) by OSWALD S. CARLISS 18
New Accident Prevention Bulletins 1
New Accident Prevention Products 61

MAINTENANCE

Protective Coatings for Plant Sanitation by EVERETT B. NELSON 14
Heating With Infra-Red 25
New Maintenance Bulletins 1
New Maintenance Products 61

FIRE PROTECTION

The Fire Front 33
Building Separation for Fire Protection 35
Pencil Plant Erases Fire 36
New Fire Protection Bulletins 1
New Fire Protection Products 61

INDUSTRIAL HYGIENE

Industrial Hygiene News 41
Occupational Dermatitis: Its Cause & Cure (skin protection series) 43
Keeping Up With Dust & Fume Control Developments (dust & fume control series) 48
Counterdoses for Poisoning & Overdoses 67
New Industrial Hygiene Bulletins 1
New Industrial Hygiene Products 61

SPECIAL DEPARTMENTS

Bulletins & Catalogs 1
Reader's Free Inquiry Card 1
What's Your Problem? 2
The Future Shows 6
"Safety Maintenance" Salutes 24
Another Accident Checked 26
The Safety Shelf 28
What's the Law? 30
Achievements & Awards 58
Inside the Trade 60
What's New? 61
Index to Advertisers 66

Cover picture of protected worker in steel furnace operations: by courtesy of American Iron & Steel Institute's "Steelways"

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EDITORIAL PAGE

it's SAFE to say

● LAUGHS THAT BACKFIRE

As a people, we often take pride in our national sense of humor which is an amalgam springing from many different nations, enabling us to avoid becoming a mass of stuffed-shirts. Fortunately, we not only can leven the daily grind with a bit of laughter but we can even take a malice-free joke on ourselves.

Because of this national trait, we are sometimes misunderstood by those who live with an air of, "Oh, the pain of it all." We even make it possible for our comedians of the theatre to provide their French poodles with diamond dog-collars and generally live on a grandiose scale far outstripping the living standards of all but the topmost industrial tycoons or rock n' roll idols. True, the vogue of many comedians may not be long for this world, but we pay enough for laughs to enable our professional comics to live high on the hog while their popularity lasts.

Sometimes, the price of a laugh is too high. The plant playboy is not content with repeating the script of Hope, Benny and Burns. He fancies himself as a clown whose side-splitting "humor" must be visual because he is sure that the sight-gag will throw his audience into convulsions. After all, only a stuffy square would frown on the practical joke and anything for a laugh!

Unhappily, the punch line of a practical joke often is delivered in the traction-ward of the nearest hospital, and what started out to be a big laugh ends up as a tragedy.

For some reason, a startling attack from the rear is supposed to be hysterically funny. The joker sees no harm in building up to a loud guffaw as he turns a compressed-air line on the posterior of his good old buddy who failed to see a harmless(?) joke and is carried out with a ruptured spleen. As for electric-shock gags, boy, oh boy, they went over big with the gang before leaving the last job.

Professional comedians are paid to be funny and even many of them must depend upon gags sweated out by an army of script-writers. Because of our increasingly adult sense of humor, we have put the whammy on the old-time burlesque comic who got his laughs with the banana-peel slide, the pie-in-the-eye bit and the ripped pants routine.

Laughter helps to make the pains of life endurable, but it has a hollow ring when attempted at the expense of another's comfort or safety. Horse-play is very appropriate in the circus ring but not on the job. Nothing can be so impractical as the so-called practical joke which backfires. That sort of "humor" is for children or fools . . . and children or fools have no place in industry.

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(Use Key # O-3 on Inquiry Card on page 1)

San Francisco, Calif. *February 16–17*

Tenth Annual California Statewide meeting of the Governor's Industrial Safety Conference (Fairmont Hotel). Michael Flagg, Coordinator, % Dept. of Industrial Relations, 965 Mission St. (Room 400), San Francisco, Calif.

Philadelphia, Pa. *March 9–10*

Twenty-Sixth Annual Regional Safety & Fire Conference and Exhibit (Bellevue-Stratford Hotel). Harry H. Verdier, executive director, Safety Council, Chamber of Commerce of Greater Philadelphia, 121 S. Broad St., Philadelphia 7, Pa.

Fort Wayne, Ind. *March 15–16*

1960 Northeastern Indiana Safety Conference and Exhibit. Ivan A. Martin, Safety Council Manager, Chamber of Commerce Building, Fort Wayne, Ind.

Boston, Mass. *March 21–22*

Thirty-ninth Annual Massachusetts Safety Conference and Exhibit (Hotel Statler). Bert Harmon, Manager, Massachusetts Safety Council, 54 Devonshire St., Boston 9, Mass.

New York, N. Y. *March 28–April 1*

Thirtieth Annual Greater New York Safety Convention and Exposition (Statler Hilton Hotel). William J. Farley, convention secretary, Greater New York Safety Council, Inc., 60 E. 42nd St., New York 17, N. Y.

Berkeley-Oakland, Calif. *Mar. 29–30*

Eighth Annual Northern California Safety Congress & Exhibits (Hotel Claremont). Clinton W. Dreyer, managing director, Eastbay Chapter National Safety Council, 1322 Webster St., Oakland 12, Calif.

Los Angeles, Calif. *April 11–13*

Seventh Annual Western Safety Congress and Exhibit (Ambassador Hotel). Greater Los Angeles Safety Council, 3388 W. 8th St., Los Angeles 5, Calif.

Detroit, Mich. *April 12–14*

Thirtieth Annual Michigan Safety Conference and Exhibit (Sheraton-Cadillac Hotel). Ben Duguid, executive secretary, % Allstate Insurance Co., Detroit, Mich.

Buffalo, N. Y. *April 12–14*

Twentieth Western New York Safety Conference and Exhibit (Hotel Statler-Hilton). Clifford H. Seymour, executive secretary, Western New York Safety Conference, Inc., P. O. Box 315, Niagara Falls, N. Y.

Columbus, Ohio *April 19–21*

Thirtieth Annual All-Ohio Safety Congress and Exhibit (Neil House). Arthur W. Moon, congress manager, 400 So. Front St., 3rd Floor, Columbus 15, O.

Indianapolis, Ind. *April 27–28*

Thirteenth Central Indiana Safety Conference and Exhibit (Claypool Hotel). Indianapolis Safety Council, 320 N. Meridian St., Indianapolis 11, Ind.

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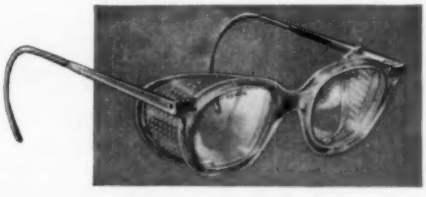

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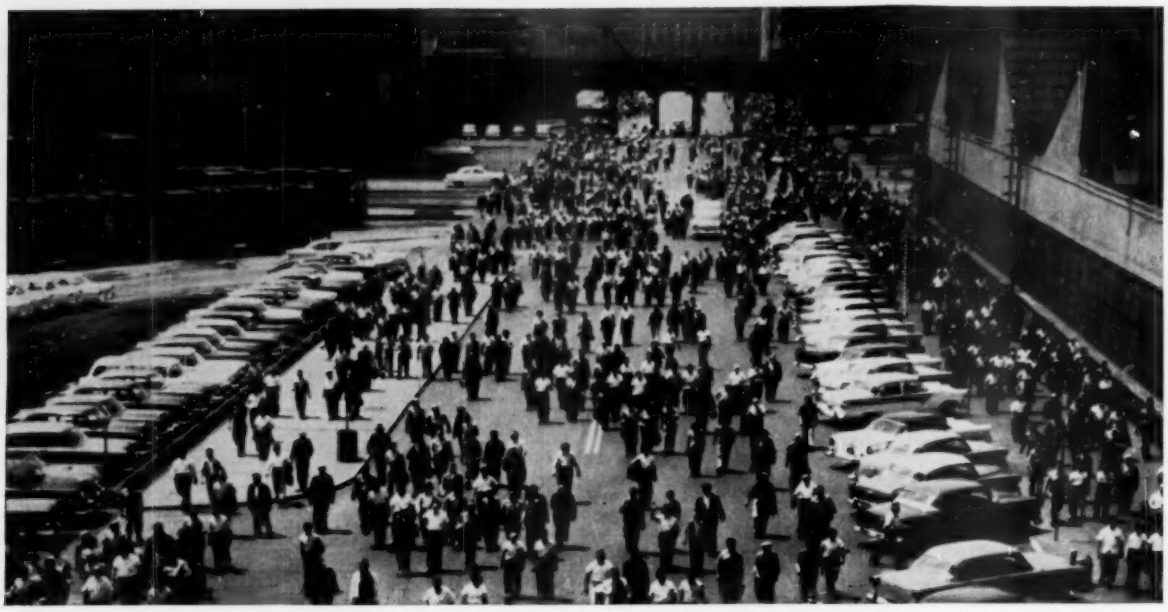

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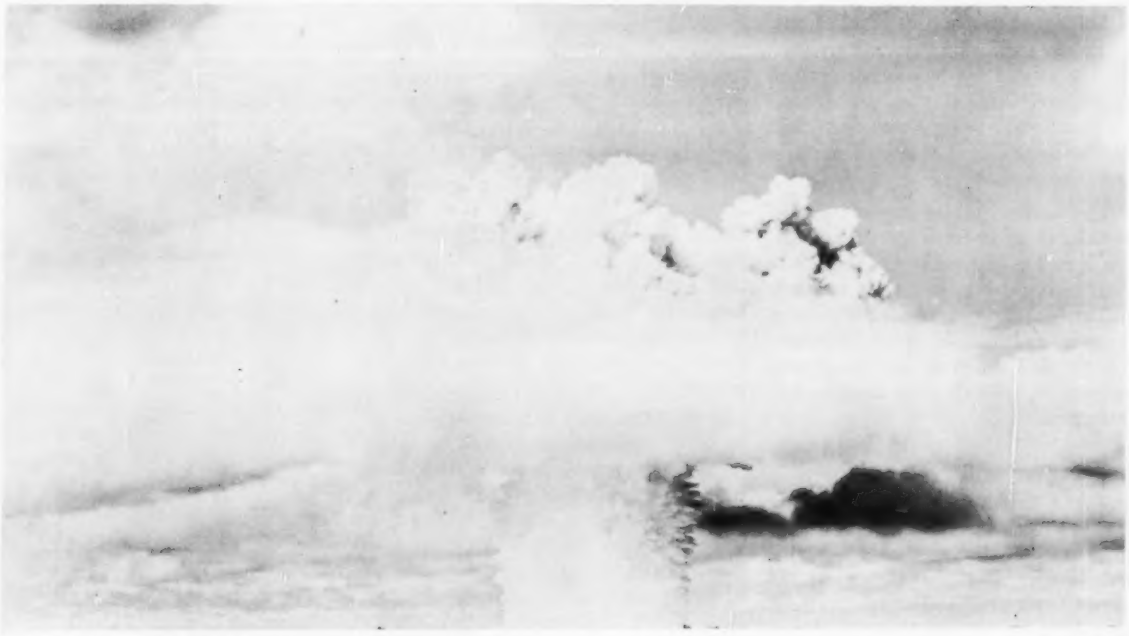


Training the Plant Civil Defense Corps

by **ARTHUR W. HARRIGAN**
Supervisor
Industrial Defense Planning
Western Electric Company

The stark reality of the nuclear threat has given a new sense of urgency to industry's planning of measures that will protect employees. This awful threat has also greatly enlarged the dimensions of industry's job both in training employees in measures for their self-protection and in stimulating their sense of responsibility for their own protection. Personnel protection measures and the employee training that is involved, therefore, constitute one of the most important areas of industrial defense planning.

There was a time when the worker's principal responsibility of a personnel protection nature was to do his work in a way that was safe for him and for his associates and to be able to move quickly out of the building in the event of a fire. What was adequate in the type of emergency condition likely to arise out of normal day-to-day productive activities, however, became hopelessly inadequate to deal with the entirely new situation which confronts us.

Meeting New Situation

To meet this new situation, Western Electric Company and other companies recognized **that their existing protective forces would have to be greatly expanded, that some new type of protective force would have to be created and that a special and intensive effort would be needed to train all employees in the special action they must take to minimize blast and radiation injuries.** These three areas of activity make up the "Personnel Protection" phase of the Western Electric Company's Industrial Defense Planning Program.

Expanded Training

The major action that we took in expanding existing protective forces was to stimulate employees to take First-Aid training and to form these trained employees into teams which have designated areas of responsibility in the Plant Defense Organization. These teams supplement the "cot crews" that we traditionally used to deal with the normal day-to-day emergencies that might arise in a large production organization.

Our objective was to train at least 10 percent of our employees in First-Aid, an objective which we have generally attained and in some cases as many as 40 percent of the employees at a given location have taken such training. To us this is a notable accomplishment because the training was given after-hours.

The Company provided the First-Aid Instructor and in some cases a small first-aid kit for those who completed the course. These are not significant costs when it is recognized that the worker who is trained in first-aid is the worker with a better safety record. Even if the training did not yield a better record on the job, there is no question that it greatly improves our relations with employees because we have numerous cases where the trained first-aider has been of tremendous help to members of his family injured in the home and to his fellow-men injured on the highway.

Another expansion of existing protective forces was the addition and training of fire-fighting auxiliaries to supplement existing full time and part-time crews. The type

of holocaust that might result from a nuclear explosion is much greater than anything we have ever before anticipated and it was, therefore, essential to build up our fire fighter program at many of our locations.

The second major aspect of our personnel protection program was the creation of new type protective forces required by the nuclear threat. These included Rescue Squads and Radiological Monitoring Squads, each of which represents a completely new activity for industry.

With the help of the Civil Defense people, we obtained expert training for a corps of our employees in the techniques necessary to extricate the injured from the debris of a building damaged by attack or natural disaster. These people went back to their locations and passed their training along to other plant trades people who would be necessary to form the Rescue Squad for emergencies. Equipment was assembled for this training and other equipment used in normal maintenance work was designated for emergency use.

Prepared Training Manual

In the Radiological Monitoring area we were more on our own because our efforts predated the establishment of the Radiological Courses at the various civil defense training centers. From the information that was available from the various Government agencies, however, we were able to bring together a small group of employees skilled in training or with a technical background who researched the radiological problem and prepared a training manual for use throughout the Company. Several sets of instruments were purchased while others were borrowed from civil defense units for this training. Because of the changes in the state of knowledge about radiological fallout, we have found it necessary to revise our training program for the monitors and to retrain them in some new techniques for evaluating the degree of protection afforded by various types of buildings. This will require the procurement of additional instruments which fortunately have become much less expensive than they were because of substantial Federal government purchases.

One of the problems in radiological monitoring is the expense of the instruments. Even at their present lower price, most industries cannot afford the number of instruments that would be required for operation in an emergency and we are, therefore, looking forward to the day when new instruments with the lower price tags that we hear about actually become a reality.

It is not enough to train monitors. In addition, there is need to acquaint management with the nature of the radiation hazard if they are to be convinced that "fall-out" is a serious consequence of a nuclear explosion and at the same time be acquainted with the practicability of doing something to counteract that hazard.

Personnel Training

The training of all employees in the special action that they must take to minimize blast and radiation injuries is a third and final component of our Personnel Protection Program. This includes such things as shelter drills, recognition warnings and shut-down procedures.

A. Warnings: The first thing we did in our Personnel Protection Program was to provide means for receiving an alert usually through the Bell and Lights System furnished by the Operating Telephone Companies, and a system for disseminating that warning to our employees. Our periodic shelter drills serve as a means to train our people to recognize "in-plant warnings."

B. The Warden Organization was built around our supervisory structure and made an integral part of our defense organization. Here also it was necessary to develop a manual that fitted our needs and to use it in training wardens in their responsibilities for (1) seeing that employees move quickly to shelter areas; (2) for checking to make sure that prescribed procedures for shutting down machines and processes are carried out; and (3) for taking other steps designed to minimize blast damage, such as opening windows.

Shelter drills also serve to keep the Warden Organization fully trained. While on the subject of shelter drills, a word about shelters is in order. Our shelters are areas in our plants that are considered the best available. No special features have been incorporated in them because we do not yet know what features will buy the most protection for the money. We do know, however, that no matter what is between the employee and the source of radiation, it will reduce his exposure to radiation. At certain critical levels of radiation, therefore, even a thin wall may make the difference between survival and a fatal exposure. Basements, of course, offer the best protection but where they are not available it is still possible to raise the rate of survival by putting people in less protected shelters above ground.

C. Personnel Motivation: One of the major problems in personnel protection is to encourage the employees to recognize their responsibilities and to motivate them to participate in the training that is required. Through our shelter drills, which are conducted quarterly, we have a mechanism for a certain amount of employee training and interest. Through our rescue and radiological monitoring training programs, which are conducted on the job, we also have a means for maintaining employee interest. But to keep the large body of employees convinced of the need for their own self-protection, and to keep them motivated to undertake such things as First-Aid training on their own time, requires a continuing program of action.

In our case this takes the form of a film which we use to illustrate to our employees the over-all scope of our defense planning program and how the various elements of it fit together; it includes the use of stories in the Company publications to point up what has been done at a given location; and it includes the use of booklets and other printed material which serve periodically to call the attention of our employees to the need for taking positive action for their survival.

From a symposium on industrial disaster preparedness at the 64th Annual Congress of American Industry.

Employee was using a rotary power mower at home. In backing up, he pulled mower over on left foot.

DO SAFETY SHOES REALLY SAVE?

by **CLIFFORD F. BURRIS**
Safety Director
International Business Machines Corp.
Endicott, N. Y.

Do safety shoes really protect their wearers from foot injuries? To find out if safety shoes actually are needed, let's start out with some facts and figures.

A study made of accident statistics by the National Safety Council over the past few years revealed that when protective equipment is used to safeguard specific parts of the body the resulting percentages of both disability and total compensation injuries are low.

Covered 233 Companies

For example, toes account for 80 thousand or 4 percent of all accidents, and the total compensation is 2 percent. The survey covered 233 companies, employing 815 thousand persons. There was a total of 1813 toe injuries; 1477 were non-disabling and 336 were disabling.

Extracting out only those who were injured while wearing safety shoes, there were 661 cases, of which 543 were non-disabling and 119 were disabling. This means that:

- **63 percent of those receiving toe injuries were not wearing safety shoes;**
- **and furthermore, it was found that 60 percent of the companies did not require safety shoes.**

But these figures tell only part of the story. Let's look again at the foot injuries to people who were wearing safety shoes and see what parts of the foot were injured. In other words, does the safety toe cap really protect the toe area?

Of the foot injuries to people wearing safety shoes,

- **Only 7 percent involved the 2nd, 3rd, and 4th toe, which were mainly covered by the toe cap;**
- **24 percent involved the big toe (But it was found that 85 percent of these big toe injuries were the result of impact behind the cap);**
- **21 percent, the little toe (However, 91 percent of these injuries to the little toe resulted from impact behind the toe cap);**
- **and 48 percent, other parts of the foot.**

Because this data seemed to indicate that a large portion of the injuries occurred beyond the protective area of the toe cap, this factor was investigated still further. Of the total of 661 cases of injuries to safety-shoe wearers, 27 percent involved objects striking behind the cap; 17 percent struck the cap but only cut the leather; 31 percent caused no damage to the cap at all; and the remaining 25 percent ranged from a dented cap to a crushed cap.

To gain some idea of the weight and height factors of the objects causing the injuries, the objects ranged from two pounds to as high as 60 thousand pounds and they fell from as high as 18 feet. The most frequent height reported was three feet.

As to the types of activities engaged in when the accidents occurred, they cover a variety of activities:

24 percent material handling
15 percent lifting and loading

10 percent operating machines, power tools

The remaining ranged over many various activities.

It became clear from examining the survey data that the safety cap furnished adequate protection for the areas that it was intended to cover and within the tested limits of its capacity. It is a moot point as to whether or not the safety cap could be redesigned to give more complete coverage to the great toe and the small toe. There might be construction and fabrication difficulties, and there might be a loss of flexibility in the use of the shoe.

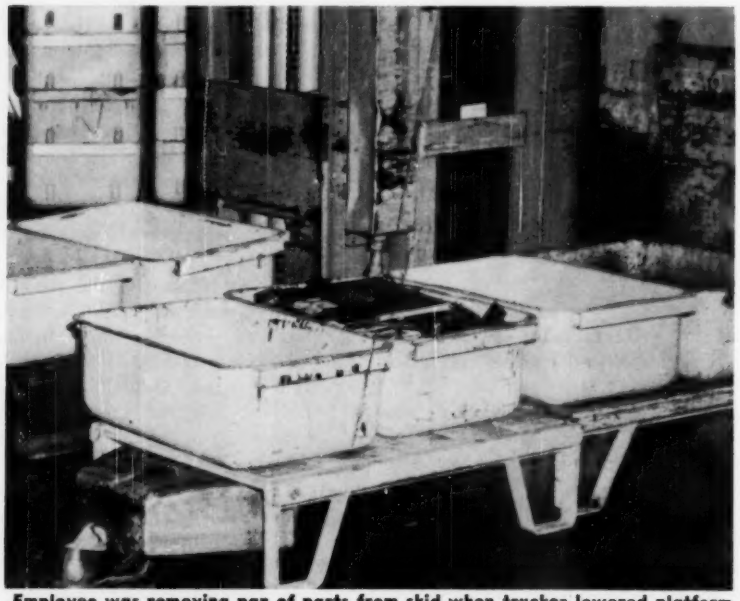
We might hypothesize that many cases of contact of weights with toes were not reported, since they caused no injury because of the presence of the toe cap. Had the toe cap not been there, these cases might well have fallen into the toe-injury category and then have been so reported. The major weakness in this total survey is that the National Safety Council has no idea of the many cases where the toe cap was involved but were not reported, since there seemed no need for the worker to do so.

Safety Shoe Code

American Standards Association with the help of the government and many shoe industries has set standards and specifications for safety shoes. They must be well constructed, solid work shoes with steel toe boxes for industrial use. The toe box is incorporated into the shoe during construction and rests on the sole of the shoe. The safety toe shoe must be capable of supporting a static load of 2500 pounds and of withstanding the impact of a 50-pound weight dropped one foot. The inside of the toe box must not come closer than one-half inch of the upper surface of the sole under either of the above tests. So far, only metal toe boxes have withstood these tests. The strengths required are identical for both women's and men's safety shoes.

Types of Footwear

Metal toe boxes may be used in shoes of other types, such as conductive, non-sparking, molders, or non-conductive shoes. For work under wet conditions, rubber boots or rubber shoes should be worn, having a steel toe box to protect against impact. To protect feet from the heaviest impacts, foot guards should be worn in addition to safety shoes. Heavy gauge flanged and corrugated sheet metal foot guards protect the feet from shoes to ankles. With the flange resting upon a firm floor surface, the foot guard should resist an impact of at least 300 foot-pounds without sufficient deformation to damage the shoes underneath or injure the feet.



Employee was removing pan of parts from skid when trucker lowered platform on his foot. In lower left hand corner is shoe which figured in the accident.

Safety shoes of the "congress" or gaiter type are used in some plants where employees are exposed to splashes of molten metal. Having no fasteners, such shoes are easily and quickly removable in any emergency. Some foundry and steel operations have reported that serious burns have occurred to men unable to remove shoes of ordinary work-type in an emergency. As in all such occupations, the tops of the shoes should be covered by the trouser-legs, spats, or leggings, to keep out molten metal.

In some industries such as construction, where there may be an increased hazard from protruding nails and where contact with energized equipment is remote, shoes or boots are equipped with reinforced soles or inner soles of flexible metal.

Special shoes made with a stitched and cemented construction should be worn by electricians. These shoes serve as good insulators.

For wet conditions such as are found in dairies and breweries, leather shoes with wood soles or wood-soled sandals worn over the shoes are effective.

Wood shoes provide good foot protection on jobs which require walking on hot surfaces which are not hot enough to char the wood. Wood soles have been so generally used by men handling hot asphalt that they are sometimes called paver's shoes. They are, however, equally satisfactory for other work which requires soles that do not conduct heat.

Among the recent developments in design and manufacturing, several companies have produced safety shoes that are insulated, slip resistant and some feature entirely new construction, all of which add to the varied uses of safety shoes.

Use of Safety Shoes

The safety toe shoe is generally thought of in connection with handling of heavy material. However, in industry there are other applications. Safety shoes should be worn by:

1. **Handlers of heavy materials.**
2. **Management personnel working in areas such as machining.**
3. **Engineering personnel working in areas such as machining.**

4. Clerical employees such as mailboys and timekeepers who must enter machining areas.

5. Employees engaged in building services and plant protection.

6. Assembly where relatively light parts are put together forming heavy subassemblies.

Outside of industry other applications of safety shoes might be:

1. Farming

2. Home workshops

3. Operation of power lawn mowers.

Fitting Employees with Safety Shoes

Many companies have set up shoe departments in their plants with the aid of shoe manufacturers and provide trained employees to fit personnel with the correct type shoe for the hazard involved. The shoe manufacturers will generally aid in fitting individuals who experience difficulty in finding the correct fit.

Subsidy Programs

In addition to supplying a shoe department many industries subsidize the cost of the safety shoes. Some of the ways they do this are as follows:

1. By purchasing the shoes directly from the manufacturer and supplying the safety shoes to the employee at a reduced cost or at wholesale cost.

2. By purchasing the shoes directly from the manufacturer and charging the employee a flat rate.

3. By purchasing shoes from the manufacturer and allowing 50 percent up to a specified maximum.

4. By allowing employees to purchase shoes from a vendor of their own choosing and allowing 50 percent of cost up to a specified maximum.

Most industries require the employee to obtain an approval from his supervisor for reimbursement for safety shoes.

Promotional Programs

What are the ways of promoting the use of safety shoes in industry? Here are some possibilities:

1. A plant or company newspaper
2. Bulletin board posters
3. Films
4. Booklets
5. Exhibits
6. Shoe clubs
7. Demonstrations

One or all of the above mediums can be used to depict what happens when shoes with safety toes are worn during an accident. You can also show your employee the many styles of safety shoes that are now available, many of which resemble a typical dress shoe. However, along with the above, a subsidy program seems to work best as this indicates to the employee that the company itself is convinced that safety shoes are a real benefit and also indicates that the company is interested in its employees' safety.

From an address presented at the 29th Annual Greater New York Safety Convention. Pictures by courtesy of International Business Machines Corp.

In this instance the feed tube on an automatic screw machine was standing on edge. In falling, it hit an employee on right foot with its 75-pound weight.

Misuse of Color Creates Hazards

The trend toward beautifying factory interiors through use of pastel colors may play havoc with safety precautions, a paint expert warned recently. Robert A. Fergusson, president of Rust-Oleum Corporation, Evanston, Illinois, said strong colors that used to signify dangerous or moving equipment are being toned down to fit modern decor. This is especially true of new factories, he pointed out. As a result, the colors may no longer be recognized as danger signals.

Fergusson said his firm, along with other coatings manufacturers, in cooperation with the American Standards Association, worked out strong color symbols for factories several years ago. Use of these colors has been credited with reducing factory accidents, he added. Certain basic strong colors are now accepted as symbols. These include:

Alert orange for portions of machines or equipment which might crush, cut, electrocute, or otherwise injure.

Vivid yellow to indicate tripping or moving equipment hazards and objects such as low beams.

Pimento red for all fire protection and fire-fighting equipment.

Precaution blue to mark electrical controls, elevators, less hazardous areas, operating levers.

Safety green to identify first aid kits, safety equipment and locations.

Purple to warn against radiation hazards.

Decorative schemes based on color complementation tend to use pastel colors as background and often cause strong colors to blend with their surroundings, Fergusson pointed out. This destroys the purpose of color-coding the hazards by diluting the visual impact of the strong colors.

Protective Coatings

by **EVERETT B. NELSON**
Color Engineer
Barreled Sunlight Paint Co.
Providence, R. I.

Many of us use the word "paints" as a generic term for all types of coatings, which also include enamels, varnishes, shellac and lacquers. All these coatings can be decorative as well as protective, and they should be. But in the industrial plant, where conditions are always specialized and often severe, proper protection of surfaces must always take precedence over mere decoration.

These protective coatings, which are liquid or semi-liquid as purchased and applied, dry to an optimum thickness of about 2/1000 of an inch per coat. When properly formulated and applied, they dry by evaporation and oxidation to a continuous, unbroken shield of protection. Actually, protective coatings can vary in viscosity according to purpose, all the way up to mastic coatings which have to be trowelled on. Generally speaking, however, the protective coatings for maintenance work referred to here are or can be sufficiently liquid for brush, roller, spray or dip application.

There is a trend today toward one-coat work on repaint jobs. And with labor costs taking at least 80¢ of every painting dollar, this seems a good and perhaps inevitable trend. It is being met most admirably by the paint industry through new and better finishes which will do a satisfactory repaint job in one solid coat.

But on new work, and even on certain types of repaint work, a two-coat painting system is called for; and if you want true economy through long service, you would be ill-advised to settle for less. This two-coat system in turn calls for two entirely different types of coatings: (1) the Primer or Undercoat, which is formulated to meet the conditions of the "substrate" or underlying surface; and (2) the Finish Coat, which is formulated to meet the conditions of the outer surface exposure.

Some of the requirements for good Primer and Finish Coat materials are outlined in Tables 1 and 2. These requirements are truly a big order, but our industry has made heroic strides in the past decade or so. And between the growing list of available raw materials and the skill of modern formulating chemists, what seemed impossible yesterday or may still seem improbable today may be a commonplace tomorrow.

TABLE 1: Requirements for a Primer Coat

1. Be easy to apply.
2. Deliver a reasonable number of square feet of coverage per gallon.
3. Seal the surface thoroughly and have good "hiding power" so that the Finish Coat will be smooth, solid, and uniform in color and sheen. Otherwise, some of the oils of the Finish Coat may be absorbed by the porous subsurface, producing an uneven appearance and poor washability and dirt resistance.
4. For highly specialized conditions, the Primer may have to be resistant to conditions inherent in the subsurface (for example, a Primer for ferrous metal must be rust inhibitive, or one for plaster or masonry must not decompose from moisture or the release of alkali or free lime from the subsurface).
5. It must have good adhesion to itself and also sufficient "tooth" to its exterior side to receive and hold the Finish Coat.

TABLE 2: Requirements for a Finish Coat

1. Be easy to apply.
2. Deliver good yardage per gallon.
3. Have a smooth, solid, even appearance.
4. Resist yellowing if white; and resist color change if colored.
5. Resist dirt collection, abrasion, and repeated washings.
6. For special applications, it must be impervious to corrosive or destructive action by acids, alkalis, alcohol, fumes, gases, smoke, moisture, mildew, etc.
7. For other specialized applications, it may have to be germicidal or fire-resistant.

What's In a Paint?

We might take a look at what goes into a can of paint, and at how its various ingredients are put together. For though the formula as you see it on the label means very little except to a paint man or a trained chemist, and how the finished product **performs** is the true criterion of its value to the user, nonetheless it is perhaps helpful to have some idea as to WHY certain types of paints are best under certain conditions.

Protective coatings are, except for clear coatings such as varnish or shellac, actually a combination

of dry powders called "pigments" with a liquid mixture called the "vehicle." These two parts, pigment and vehicle, are ground together for various lengths of time in various types of grinding "mills" according to criteria which have been set up by the formulating laboratory.

These criteria, which are expressed in precise chemical or physical terms, are set up both for performance and for batch-to-batch uniformity, in order to meet every time the requirements of the job for which the particular coating is designed. This would include pre-

for Plant Sanitation

Here's a guide to the ingredients in paint, explaining the characteristics that each of the ingredients shown on the label impart to the paint.

cise definition of such desired characteristics as color or whiteness, degree of sheen, hiding units, viscosity, rate of flow and many others.

With the careful, responsible manufacturer, these criteria as set up in the formulating laboratory are used by another group of technicians in the "control laboratory" to check each batch before it is released for packaging. And finally, a "control sample" of each batch is kept in a coded, tightly sealed container for ready reference in case of a complaint or a question from the field.

Laboratory batches of new or improved coatings are subjected to careful and exhaustive laboratory tests, including actual application on typical surfaces. The responsible coatings manufacturer also subjects semi-plant or final plant batches to objective field tests by disinterested professional applicators or typical users before the product is finally released. Indeed, the reports from the field, expressed in **non-technical** terms, are the basis for the precise criteria, expressed in **technical** terms, which govern the manufacture and constant control of the product as it is finally offered to the consuming public.

Now let's take a look at the ingredients in these protective coatings, for they, in proper combination, are what make the coatings perform the specialized jobs called for by the maintenance, protection and sanitation requirements of the user. First, let's look at the dry part, or "Pigment." These are roughly of four types.

TYPE ONE would be pure metal in finely divided form, such as is called for by aluminum paints or zinc dust metal primers. The zinc dust is pure metallic zinc in practically powdered form, while most aluminum pigment of high quality is in flake form and specially coated so that as it settles into the drying adhesive film it "leafs" or overlaps to form a continuous barrier of protective metal on the painted surface.

TYPE TWO would be the so-called "prime" or "active" white metallic compounds which form the basic pigmentation of all but a few highly specialized coatings. These are (1) Lead—usually in carbonate form, (2) Zinc oxide, and (3) Titanium dioxide. Antimony oxide should perhaps also be mentioned here. It is little used in conventional coatings, but it does have special qualities of value in fire-retardant coatings.

Lead compounds are the oldest of all known white pigments. Because of their toxicity and their tendency to impart a "brushmarky" appearance to the film, however, they are used today only in exterior house paints. Here they disperse readily in the drying oils, stabilize and stimulate the relatively slow drying of the essentially "long oil" vehicle, work easily under the brush, and contribute to the opacity, durability and moisture resistance of the film.

The lead pigment most used in exterior paints is the carbonate type sometimes known simply as "White Lead." Another type, lead sulphate or "Sublimed Lead," is used principally today in combination with zinc oxide in the manufacture of "Leaded Zinc." It is somewhat less toxic than the carbonate type, has less tendency to settle in the package, and better resists blackening from sulphurous atmospheres.

Zinc oxide is a very finely particled, non-poisonous, somewhat rust inhibitive white pigment of moderate hiding power which contributes to the hardness of paint films. In white interior finishes it helps to inhibit yellowing, and among its other virtues are resistance to fumes, mildew and repeated washing. It is also opaque to ultraviolet light, and this plus its hardness and resistance to fumes

and mildew makes it an important pigment in exterior as well as interior finishes. In exterior paints, a type with somewhat larger particle size is used for greater weather resistance.

Newest of the prime white pigments is the glamorous one known as titanium dioxide, which is produced, dramatically enough, from a coal-black deposit called Ilmenite. It is extremely fine in particle size and has brilliant whiteness and extreme opacity. It is inert to all other paint ingredients and has good resistance to acids and alkalis. In a few short years, it has become a practically indispensable white pigment, and through surface treatment with other metallic compounds it has become an extremely durable one.

TYPE THREE pigments would be what are generally known as "extenders" or "inerts," and they merit some emphasis here because they are too often thought of as mere "adulterants" to give artificial body and shave ingredient costs at the expense of good solid "on-the-wall" performance. Do not be disturbed, however, if you see, in the formula of a reputable manufacturer, reasonable amounts of such extender pigments as barium sulphate, silica, magnesium silicate, aluminum silicate or calcium carbonate, for they are included by him to add performance values. (See descriptions of Type Three pigments in smaller type below.)

TYPE FOUR pigments would be colored pigments such as are used not only for tinting basic white coatings to light or medium colors but also for grinding directly with the liquid vehicle to make solid-colored finishes such as blacks, outside trim greens and the brightly colored enamels used for piping identification and the promotion of plant safety.

These colored pigments are of three types: (1) **Natural Earth Pigments** such as siennas, umbers and oxides produced by nature through the staining of natural clays or earths by minerals such as iron; (2) **Inorganic Colors** made from metallic compounds of iron, lead, zinc, tin, cadmium and others; and (3) **Organic Colors,** which are actually dyestuffs or chemical compounds derived largely from coal tars.

Generally speaking, the organic and inorganic colors—which are often grouped together under the name of "chemical colors"—are more uniform in composition, color and strength than the natural earth colors. In turn, the metallic compounds are as a group more lightfast and less subject to "bleeding" than the coal tar organics. Oddly enough, however, many of the chemical colors which are satisfactorily lightfast or "permanent" when used as solid colors become "fugitive" when used for tinting white bases to light or medium tints. And when two or more colors are used together to produce a special tint, care must be taken that one is not more fugitive than the others or it will fade on exposure to light and change the original color to one entirely different and often most unpleasant.

All the special requirements of the coating itself are taken into careful consideration by the experienced manufacturer when he chooses the pigments required to achieve a desired color—including their opacity, lightfastness, resistance to heat, acids, alkalis, bleeding, etc., and their compatibility with both the vehicle and the other pigments used.

Colored pigments in dry powder form are usually ground to a semi-paste consistency by the manufacturer in an appropriate liquid for field tinting by the painter. Because of the wide range of vehicles used in modern paint-making, however, the problem of stocking all the various media for field tinting has become a serious one, and for this purpose there are now available what are known as "Universal Tinting Colors" which can be used with equal success in just about every type of interior and exterior coating including both oil and water base types.

BARIUM SULPHATE is a heavy pigment also known as Barytes or Blanc Fixe. It is used alone, and is also combined with zinc sulphide to make a compound known as Lithopone which, though no longer used in most oil-base paints, is a popular pigment for water base paints because of its hydrophilic property or affinity for water. Barium sulphate is a very stable and chemically inert pigment, and when wet with the oils in the vehicle is absolutely colorless. Its very real virtues are that it helps prolong film life by its high density, helps build a heavier protective film by modifying the spreading rate and, when used in moderation, helps to increase the durability of the coating.

SILICA is one of the most abundant substances in the earth's crust and a very useful extender pigment. In its various forms it is useful in adding necessary bulk, as a "filler" to impart good sanding qualities to primers or undercoats, and as a "flatting agent" to control the sheen of semigloss, eggshell or flat finishes. It also helps to increase the strength and flexibility of the film, and in adding porosity where a "breather type" paint is indicated for the release of moisture from the substratum without impairing the film or causing it to peel from hydrostatic pressure.

MAGNESIUM SILICATE is also available in various forms and particle shapes. Its properties of fluffiness help to keep other pigments in suspension and thus minimize settling. It is used to control sheen and as an important ingredient in exterior paints to control film wear. It is also sometimes used as part of a composite pigmentation in fire retardant coatings.

ALUMINUM SILICATE, more commonly called "China Clay," is another fluffy pigment which is very popular in water-base paints because of its hydrophilic properties. It also gives good brushability to water-base paints and helps prevent settling out of the pigments in the package.

CALCIUM CARBONATE or "Whiting" as used in paint formulation was originally a limestone deposit from tiny prehistoric shells. Today, it is made either by grinding marble or by precipitation from chemical solutions. It is used in undercoats for its flow and easy sanding qualities. In a specially "surface treated" form it controls surface penetration in finishes such as those of the Alkyd type where "holdout" is desired for eveness of sheen and color even over surfaces of widely varying porosity.

The Paint "Vehicle"

"The vehicle" is usually a chemical and/or physical combination of five different kinds of liquids. These five, each of which has its own important role, are (1) drying oils, (2) driers, (3) resins, (4) solvents or thinners and (5) additives.

DRYING OILS are natural oils, usually of vegetable origin, which have the unique property of absorbing oxygen and hardening through this absorption into a dry, elastic film. They must be clear, of light color and have good color retention. In protective coatings

they (1) provide a means for application of the coating, (2) hold the pigments in solid suspension, (3) form a firm, flexible and adhesive bond with the surface and (4) contribute to the durability of the film.

Linseed Oil: Oldest and still the most important drying oil. Capable of many modifications for specialized applications.

Tung or China Oil: A fast-drying oil, made from Chinese Tung nuts and helps to form a hard film that is resistant to weather and to many chemicals including alkalis.

Soya: A semi-drying oil with a very clear color and resistance to yellowing.

Dehydrated Castor: A semi-drying oil with good color plus toughness, flexibility and good water resistance.

Other vegetable oils include **Safflower,** from the seed of a thistle-like plant, which is very much like Soya; **Oiticia** and **Perilla,** whose uses are still somewhat limited; and others such as **Corn,** and **Cottonseed** which are used in non-drying alkyds for use in lacquers and baking finishes.

Passing mention should also be made of **fish oils,** which are extracted mainly from menhaden, pilchard and sardines. Like corn, hemp and cottonseed, they are cheap, and they do have some value as penetrants in rust inhibitive metal primers. They are, however, too soft and sticky to make paints that dry satisfactorily, and they cannot be used in whites or light colors because they yellow very badly as they age.

DRIERS: The drying of all these oils is assisted by the catalytic action of certain metallic salts which we call "Driers." What we refer to as a "4-Hour Enamel," for example, would take days rather than hours to dry if it were not for these handy catalysts. The most common metals used as driers are cobalt, manganese, lead, zinc, calcium and iron, and they are reacted with organic acids to form soluble salts. The type and amount of drier varies with the oils used, with the pigmentation of the coating, and with the conditions under which it is to perform. Oddly enough, too much drier will often inhibit rather than speed the drying action.

RESINS: Extravagant claims have been made recently for so-called "plastic paints." Actually, most modern paints are of plastic type, for they contain resins which are the same as or similar to those used in plastic materials.

The ancients used such natural resins as Amber, Mastic, Gum Arabic, Rosin, Pitch and Bitumen in their somewhat crude protective and preservative coatings. Some natural resins are still used in today's protective coatings, but for

the most part synthetic types which make for greater uniformity and control are used. And the new forms, plus improvements or mutations in existing ones, are appearing at a pace so dizzying that even the most alert paint technician is hard put to keep up with them all.

At the risk of oversimplification, all of these resins can be divided into two main types:

Type 1, which includes Rosins, Ester Gums, Phenolics, Cumarones and Alkyds, requires blending with oils or oil acids in real or pseudo chemical combinations to be of value in protective coatings.

Type 2, which includes Vinyls, Acrylics, Butadiene-Styrenes, Chlorinated Rubbers, Neoprenes, Epoxies, Silicones, Urethanes and Cellulose Derivatives, generally require no oil modification but are instead made usable in paints through the use of chemical plasticizers or through various means of chemical synthesis.

Each of these resins has certain outstanding virtues such as weather resistance, chemical resistance, heat resistance, etc., but also has certain limitations or drawbacks. Sometimes one type of a particular resin will give more of the desired properties, in combination with the other ingredients, than will another type of the very same resin. And often it is desirable to combine two or more to give maximum benefits with a minimum of risk.

Originally, latex resins were those of a synthetic rubber made from a combination of Styrene and Butadiene. Actually, when any resin is emulsified for use in a water-base emulsion coating, it becomes a latex. Almost any of the resins now in use in other paints could be emulsified for use in water-base paints, but the ones currently in common use are Butadiene-Styrenes, Acrylics and Vinyls.

These latex emulsion systems are without doubt the most significant development in paints since drying oils were first developed, and though there are many severe conditions in the industrial plant to which they do not yet lend themselves, in due time they may find even greater uses in this important paint market.

SOLVENTS or Thinners as used in protective or maintenance coatings are essentially volatile, water-white liquids which form clear solutions with the drying oils and resins. They evaporate rapidly and almost completely during the drying period, and so are not a permanent part of the film. Yet they have definite value in both the manufacture of paints and in their application.

During the manufacturing stage, they help to wet the pigments, dissolve the resins and blend all the ingredients into a reasonably homogeneous whole. After packaging, they help to inhibit any tendency for the coating to skin or gel. At the application stage, they reduce the viscosity of the vehicle for easier application, improve adhesion of the coating to the surface, and reduce the danger of wrinkling during drying.

In the directions on the back of the label you will always find the manufacturer's recommendations as to both type and safe amount of solvent to use. Needless to say, these recommendations should be followed; for the wrong kind of solvent, or even too much of the prescribed kind, can seriously affect the sheen, character and even the performance of the coating. On spray work, the trend today is to use greater pressure at the gun head or to heat the coating in special equipment to reduce its viscosity rather than run the risk of overthinning.

(Continued on page 56)

INDUSTRIAL TRUCKS DESIGNED

by **OSWALD S. CARLISS**
Director of Engineering
The Yale & Towne Mfg. Co.
Philadelphia, Pa.

The industrial truck industry has a natural and intense interest in the safety of design and operation of industrial trucks. Over the years, the industry has been in the forefront to provide better designed and better operated materials handling equipment. To this end, much of the work of the Industrial Truck Association relates to the improvement of industrial vehicles. This interest stems not only from important humanitarian considerations and a real sense of social responsibility but also from the direct economic stake which the industry has in materials handling.

The truck designer can do much to provide a safe vehicle—but it is the responsibility of the user to so control the operation of the vehicle that the inherent safety features of the truck are retained. One paragraph from the introduction to the ASME-ASA "Safety Code for Industrial Power Trucks" reads, "The use of industrial power trucks is subject to certain hazards that cannot be overcome by purely mechanical means, but only by the exercise of intelligence, care and common sense. It is, therefore, essential to have competent and careful operators, physically and mentally fit, and thoroughly trained. Serious hazards are overloading, slipping of the load, obstructions in the path of travel or lift, use of equipment for a purpose for which it was not intended or designed.

Here an electric truck, of 4,000 pound capacity and with canopy guard, loads pallet of cartons in grocery warehouse.

Many of these hazards can be eliminated if the users and manufacturers adhere to the practices recommended in this code."

Mechanical handling is inherently safe handling; the most obvious and initial gain in safety being that the machine—not the man—does the lifting and carrying. The reduction in hernias and smashed hands alone is an impressive figure. However, safety is not a static thing. Our ideas of safety ten or even five years ago are not adequate today. As equipment performance is improved—lifting heights and speeds raised, travel speeds increased, and as the users' ability to get more work out of the equipment increases—our concepts of safety in design and operation must keep pace with the mechanical advances.

Designing safety into an industrial truck is a complex problem. Each new idea or device must be carefully examined and tested. The truck manufacturer's responsibility in terms of operational safety is to strive to make misuse both less likely and less harmful insofar as this can be accomplished through design. He also has the prime responsibility for providing equipment which has a high order of structural strength and mechanical reliability. The designer can only encourage and facilitate safe operation—he can not guarantee it.

Let us look at what the industrial truck industry has been doing about this problem of designing improved and safer trucks.

This heavy-duty gas truck, designed for maximum visibility, handles sewer pipe at a filtration station.

A propane-powered gas truck with load back-rest is shown handling packages in a grocery warehouse.

An electric straddle truck, built for top maneuverability in narrowest aisles, positions load of groceries.

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FOR SAFETY

Detail of same operation as shown at right. Mirror permits drivers to see traffic moving on intersecting aisle.

The basic design of the truck is dictated by the user demand. No truck manufacturer would intentionally design a truck which he believed was unattractive to the prospective market—nor one which was unsafe.

Better Lifting Mechanisms

The economics of warehousing indicates storing to greater heights so new trucks are being built to accommodate this requirement. Practically all manufacturers are now offering triplex masts to provide higher lifts with the low overall heights needed to negotiate doorways, and to permit operation in trailers where the floor strength will permit. Today, most manufacturers are using roller guided masts. This provides better control of the telescopic mast structure—eliminating the danger of a "hang up" of one mast—which would subsequently come crashing down.

Hydraulic components for elevating the loads have been greatly improved. Fittings, hoses, valves, pumps, and cylinders have all been redesigned to provide long and trouble-free operation.

The increased use of hydraulically actuated devices to handle loads has directed attention to the hoses which direct the flow of oil between the truck and the attachment. Draped or so-called, "flying" hoses proved awkward and dangerous. If an operator pinched or damaged a hose he might well drop the load, injuring himself or someone else. The result has been the design of hoses inside the mast structure to protect the hoses from accidental mechanical damage, improve operator visibility, and increase hose life.

Today most truck manufacturers use an "anti-cavitation" valve in the hydraulic tilt circuit. This precludes the possibility of cavitating a tilt cylinder. This condition usually occurs under a loaded condition, the force of the load forcing oil out of the forward portion of a cylinder faster than the pump is supplying oil to the opposite side. This is not a common occurrence but can happen, for example, when tilting forward with the gasoline engine idling. The result of cavitation in the tilt cylinders is an uncontrollable load when back tilting at higher lifts. An anti-cavitation valve in the tilt circuit will prevent this.

Careful study has been given to the strength and fatigue life of elevating chains. Such studies are major contributions to safety through design.

With the advent of higher travel speeds, truck brakes have been

(Continued on page 22)

Pair of 2,000 pound capacity electric trucks handle pallet loads of crated bottles as they travel brewery aisles.

A high load of lumber is lifted by this big, 15,000 pound capacity gas truck, equipped with canopy guard.

Packages are stacked without aid of pallet by this truck, which carries canopy, carton-clamp attachment.

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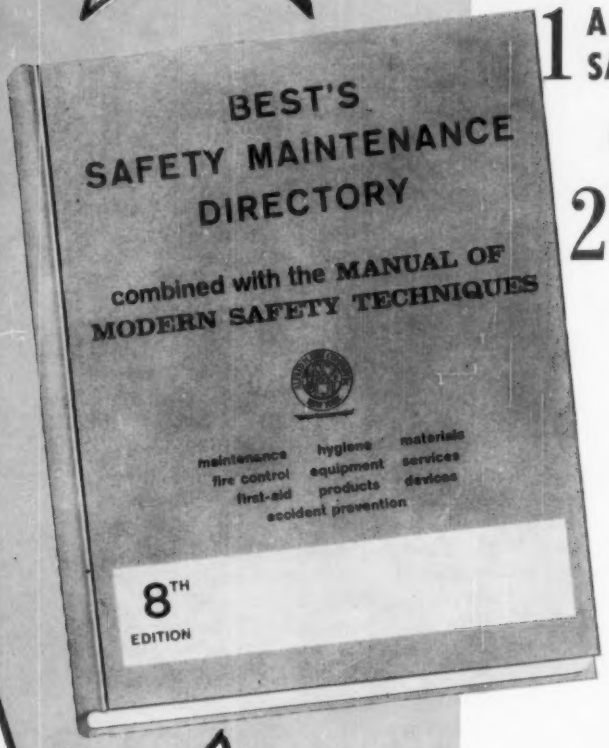

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Industrial Trucks

(from page 19)

greatly improved. The demand for higher travel speeds came from users who had found they could operate safely at higher speeds. The industry responded by providing better speed controls for both internal combustion engine and electric trucks, and also improved wheel brakes.

When trucks were predominantly electric and 5 mph was considered fast, brakes mounted on the electric motor shaft were common and adequate. With the advent of the gas truck the similarity with the automotive industry became more apparent and hydraulically actuated brakes in the drive wheels became predominant. The application of self-adjusting brakes has reduced the need for periodic adjustment.

Today's truck has much better brakes than its predecessors. A common military specification for fork truck brakes requires that the brakes be capable of resisting a horizontal force equal to 30 percent of the gross vehicle weight, including rated load, with a brake pedal pressure not exceeding 125 pounds. This means a deceleration rate of approximately 9.7 feet per second per second. A steel skid bin will slide on a steel fork (when masts are vertical) at approximately 6.5 feet per second. It is immediately apparent that skill is required when braking a truck with an elevated load. However, a truck should not be operated at anything but slow speed when the load is elevated. It is interesting to note that at least one large user of industrial trucks has special devices attached to their trucks which limit the travel speed whenever the load is more than 24 inches off the floor.

Worksaver electric truck (walkie-rider model) with load back-rest, puts up stack of packages at a warehouse.

In larger trucks braking effort is reduced by means of power assisted braking mechanisms. These are primarily vacuum operated on internal combustion engine powered trucks and hydraulically operated (usually through an accumulator which provides sufficient fluid under pressure for several applications of the brakes) on battery operated trucks.

Important tasks are accomplished by this worksaver, a low lift electric pallet truck shown handling a load of dry ice on shipping dock at chemical plant.

Operator Fatigue & Safety

Operator comfort is important to safety. It has been found that proper grouping of the controls reduces operator fatigue. There is still a divergence of opinion on what constitutes proper grouping. However, the quest continues, and the controls continue to improve.

Part of operator comfort is seating and leg room. The work of the armed services in developing optimum dimensions has been very helpful, as has the research of private independent groups. The industrial truck designer is giving careful attention to such dimensions as seat height, pedal locations and stroke, steering wheel location. Another item in this same category is access. Most modern trucks provide access from either side. This gives the operator an opportunity to save himself in the event of an accident. Closely related to this, of course, is an uncluttered driver area.

Another factor aiding operator comfort is power steering. A fork truck is expected to be on the go all day long. There is far more steering than during a day's driving of an automobile. Fork trucks are heavy, especially when operating unloaded when more weight rests on the steering axle. Power steering reduces this effort, thus reducing operator fatigue.

Automatic Transmissions

In this same category we find automatic transmissions—"Forward and Reverse at the flick of the wrist"—is important when we consider the hundreds of changes of direction a driver makes during a busy day. Here again reducing the effort of clutch operation and manual shifting reduces fatigue and contributes to safety.

All of the new requirements—height of lift, speed of travel, compactness of vehicle—chiefly affect one thing, truck stability. The ITA has spent over four years developing and proving out simple static tests which could be mathemati-

cally related to the dynamics of a truck in motion, empty or loaded. These recommendations were adopted by the ASME for incorporation in their Revised Safety Code. Complete information is also available from any truck manufacturer or from the ITA. Basically, there are four tests. In each instance the truck is placed on a platform which can be tilted about one axis. It can be demonstrated that the forces developed through tilting the truck about pre-established axes are consonant with the forces developed in stopping a truck with the load in a similar position. The final values established for the angles of tilt provide for trucks with various configurations—so long as they are counterbalanced trucks—and for various top speeds. This work continues with the studies of various other types of vehicle.

Fire Safety

Safety from the point of view of fire is equally as important as safety for life and limb. Over the past few years considerable work has been done.

Cooperating with Underwriters' Laboratories, the ITA has made major contributions to the U.L. specifications governing both gas and electric trucks. For electric trucks we have classes "E" for general usage, "EE" (which is commonly referred to as spark-enclosed) for certain hazardous areas, and "EX" (or explosion proof) for areas where there are explosive concentrations of flammable vapors or gases present. The Armed Services, for example, use many class "EX" trucks for handling munitions.

For gasoline engine powered trucks we have classes "G" for general purpose operations and "GS" for more hazardous locations. You may already know that one of the acceptance tests for a class "GS" truck is to backfire the truck repeatedly against a target of loose dry cotton fiber without ignition of the cotton. Diesel engine trucks have the corresponding "D" and "DS" designations and since LPG has come into wider use, we have "LP" and "LPS."

Over all this the National Fire Protection Association maintains a close watch and based on the U.L. specifications issues instructions regarding the types of area in which each class of truck may be used.

We have conducted a series of tests on carbon monoxide in exhaust gases. As you know, many gas trucks can be equipped with oxy-catalytic mufflers intended to eliminate CO in the exhaust gases. Originally it was possible to use only "white" gasoline, but more recent developments in catalytic mufflers have produced equipment which worked equally well with the leaded gases.

However, our tests forcibly demonstrated a most important aspect of safety—maintenance of equipment. The need for adequate maintenance of equipment cannot be emphasized too strongly. During the course of our testing of oxy-catalytic mufflers we set up a "closed room test." We operated a truck on a basic warehouse cycle—travelling loaded and empty, backing and turning, raising and lowering the load. All this was done in a

(Continued on page 26)

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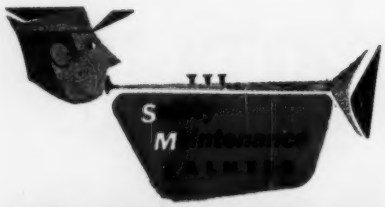
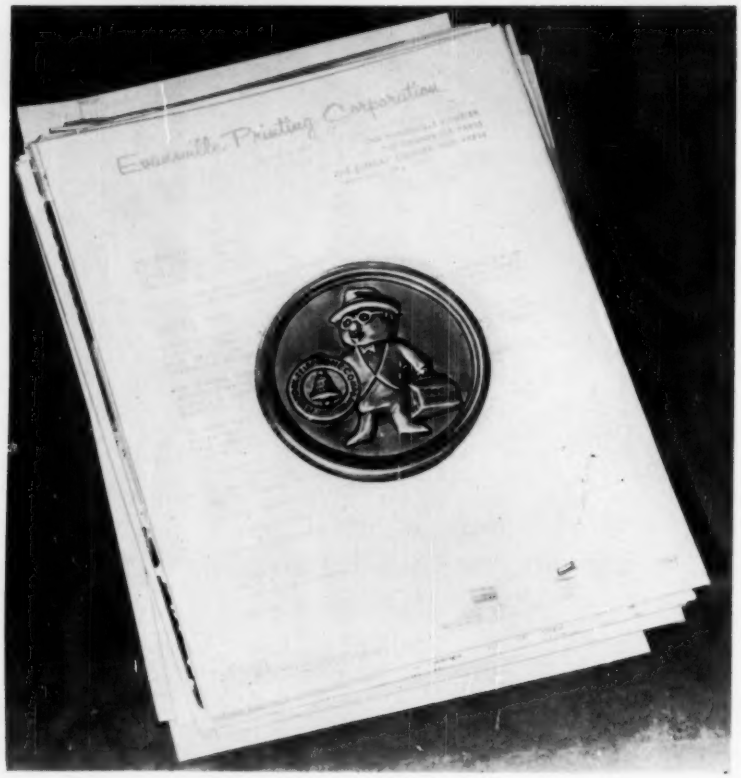


A SAFETY IDEA



Telephone Company Develops New Safety Symbol

A big step forward in the New York Telephone Company's continuing program for promoting safety awareness recently was taken when the company, taking a tip from "Smokey the Bear," developed a new safety character, named "Doc Safety."

As "Smokey the Bear" has been so successful—through publicity, advertising, and promotion—in developing awareness to the dangers of forest fires, so the New York Telephone Company feels that "Doc Safety" can be equally effective in promoting safety awareness, especially in industry.

Already, the "Doc Safety" symbol appears on company memo pads, safety literature, bulletins, and other printed matter. Recently, the character was made into a ceramic paperweight.

The "Doc Safety" paperweights were introduced at the company's Annual President's Conference where they were given to the top management people, and at management conferences, safety conferences, and other meetings.

To date, the program to promote safety awareness throughout the company has been aided considerably by the use of the "Doc Safety" symbol. The New York Telephone Company hopes that the "Doc Safety" symbol will also take hold with other companies throughout the country and will become as well-known as "Smokey the Bear." The company will cooperate with all companies interested in making use of the "Doc Safety" symbol for promoting safety awareness.

Picture by courtesy of Contemporary Ceramics.

Floor Absorbents Tests

The effect on slipperiness of a floor when sorptive mineral materials are used in the form of a sweeping compound is providing a challenge to Committee C-23 on Sorptive Mineral Materials of the American Society for Testing Materials. The committee, at a recent meeting, discussed this condition as being one of the significant properties for which a performance type of test might be developed. It is felt by the committee that in this field of materials particularly, there is a definite need for a group of performance standards. A subcommittee has a survey in progress, seeking information from the industry in an attempt to establish what plant evaluation tests are now being used.

Four proposed methods of test for evaluating significant properties of sorptive mineral materials have been submitted to ASTM for consideration. They cover sampling, free moisture, loss on ignition, and sieve analysis. Additional procedures being studied cover bulk density, oil absorption, dust content, breakdown in water, solubility in water, and mechanical breakdown. The committee is endeavoring to establish a firm background of test data by means of round-robin test programs covering these procedures. Abrasiveness and fire resistance, two very important properties, are also being studied.

A bibliography on Test Methods for Sorptive Mineral Materials used for Floor Surface Maintenance and Safety has been prepared by a task group as a guide to the actual development of test methods by the committee. There are a limited number of copies of the bibliography available in mimeographed form which can be obtained by contacting the committee secretary. The present officers of the committee are: Chairman—A. R. Balden, Chrysler Corporation, Engineering Div., Detroit, Mich.; Vice-Chairman—L. M. Mank, Minerals and Chemicals Corp. of America, Menlo Park, N. J.; Secretary—R. L. Shirley, The Eagle-Picher Co., Insulation Division, 900 American Building, Cincinnati 1, Ohio.

Infra-Red heat from ceiling-mounted generators keeps workers warm even when temperature is well below "comfort level."

Heating with Infra-Red

Do you have a building where people work in only a small portion of the total area? Then you will be interested in a new-type heating system used at Junkin Safety Appliance Company, Louisville, Ky.

Junkin heats the half of its building where employees work with gas-fired infra-red heat generators, leaving most of the storage area unheated. Because these units, suspended overhead, provide direct heat, warming the floor, tools, materials and personnel below them, Junkin maintains comfortable working conditions even with constant air movement between heated and unheated areas.

Seven heating units are suspended in one line along one side of the 50 by 100 foot building and radiate over a 25 by 85 foot area. Previously, Junkin had used two forced-air space heaters, totaling a 185,000 BTUH input, one on either side at one end of the building, but they didn't provide sufficient heat to meet the requirements of the building's usage. The forced air unit on the side now heated by infra-red radiant heat has been disconnected, and the other is used only when there is an employee at a work station directly under it.

Maintains 70 Degrees

The seven infra-red units are rated at 168,000 BTUH. This is sufficient to maintain a thermostat temperature of 70 degrees in the concrete block, wood roofed building until outside temperature goes a few degrees below freezing.

In colder weather generators burn continuously and inside temperature may drop to 50 degrees or lower. Under these conditions, however, air temperature is not the measure of worker comfort. Employees work directly under the radiating surfaces of the units and 60 percent of the fuel energy is in the form of absorbable direct heat. The floor, tools and materials remain warm to the touch. The situation is comparable to that of the sportsman standing next to a bonfire in zero weather. He is warmed by radiation although the air remains cold.

Another advantage of the system is that there need be no morning warm-up period. Workers benefit from the heat as soon as it is turned on.

Converted to Line Gas

Junkin has been using propane gas because line gas was not available at the plant site at the time of installation. Propane was supplied from a tank outside the building. Recently, the installation was converted to line gas, which is even more economical. The company

also plans to install additional units on the other side of the building should the area be converted to production use.

The key to the efficiency and safety of the radiant heat system is the unique design of the ceramic burner element in the heaters, patented by a German scientist and developed into practical heaters in this country. This element's surface radiates at a temperature of 1600° Fahrenheit. Air drawn from the atmosphere is mixed with gas in a chamber behind the ceramic and passed through hundreds (200 per square inch) of small holes in the ceramic face where it burns as a separate flame at each hole. Combustion is completed within one eighth inch of the ceramic face. The rear face of the ceramic never exceeds 400° Fahrenheit.

More than half the fuel's energy is converted into infra-red rays of lengths (mostly 1.5 to 6 microns) readily absorbed by concrete and other common materials. The remainder of the heat is diffused through the space by natural movement of air and gases.

No direct ventilation is required if units are installed in well ventilated spaces. Heaters are approved by A. G. A. and Underwriters' Laboratories for unvented use in non- and semi-hazardous areas. Combustion gases contain a lower percentage of carbon monoxide than that produced by a kitchen gas range. At Junkin, infiltration of air around two large truck doors and around eaves is sufficient to maintain a healthful atmosphere.

The heaters are controlled by a thermostat, located 4 feet above the floor on the heated side of the building, operated from a 110-volt line. When temperature falls below the thermostat setting, the solenoid valve on each heater opens and a pilot light ignites the gas. There is also a thermo-couple under the pilot light which generates a current to a secondary switch controlling the solenoid valve. Should the pilot fail, the valve shuts off the gas supply. The heaters were mounted to the roof beams with angle iron brackets and a single gas supply line was installed between them.

Picture by courtesy of Perfection Industries Div., Hupp Corp

Another Accident Checked

"NO SAFETY HAT—NO WORK!" This safety philosophy expressed by crew leader Dick Paradis, formerly of Brown Company, Berlin, New Hampshire, has special significance for Francis Cellupica, loader at the firm's Burgess Woods yard. If Mr. Cellupica hadn't been wearing his aluminum safety hat, it's unlikely he'd ever have had the opportunity to be pictured here (left) with crew leader Paradis, inspecting the steel bucket that fell directly on his head. Although the 14-pound, sharp-edged bucket broke loose from a vertical conveyer and dropped from a height of 25 feet, the only damage was a dent in the hat and a somewhat "shaken" Mr. Cellupica.

Picture by courtesy of Mine Safety Appliances Co.

Industrial Trucks

(from page 23)

closed room. Meanwhile a constant check on CO concentration was maintained using approved mine safety techniques. Orginally, the carburetors of these trucks were adjusted to the optimum air-gasoline ratio, but following this series of tests we ran another. Here we checked the exhaust gas of an old and poorly adjusted truck, and then we mal-adjusted the test truck until the gas analysis was the same. We found that the special muffler was not effective when the truck is not maintained in properly adjusted condition.

The ASME-ASA Committee on the Revision of The Safety Code for Industrial Power Trucks recently completed their revision of this important code. The membership of the committee was a cross-section of industry: Operators, constructors, labor, insurance, railroads, and the government were all represented. This code is a valuable addition to literature on safety.

In the past, many individual users, dissatisfied with the over-all development of nationally applicable safety codes, have developed codes of their own. The new Safety Code will go far toward satisfying their requirements. No doubt, certain operating conditions will require specific safeguards; but the revised Safety Code should prove entirely adequate for most usages.

Much of the success of an operation depends upon the users. Adequate driver training is an absolute essential for safe operation. Many an owner is really concerned over

who drives his new Cadillac—but doesn't hesitate to turn a new fork truck worth twice as much over to a newly hired driver who was selected by his replies to a questionnaire. Aptitude testing of truck drivers is still uncommon.

The large naval supply depot in Philadelphia conducts a driver training school each year. The students are not drivers but supervisors of drivers. During the course they are trained in good driving practices and, most important, in how to teach good driving practices to their own people. This is a most important piece of work and we are grateful that the depot is so interested in safety. Practically every truck manufacturer has well prepared material available for driver training. Booklets for the driver and for the supervisor are usually available.

Hand in hand with driver training goes adequate operating rules. All too frequently, loads are stacked poorly or trucks overloaded. These are problems for supervision. Our overall attitude toward overloading is far more lenient than the attitude in Europe. One European truck designer told me, "I design a truck for a given load—2 tonnes, 4 tonnes, or more. If the truck breaks under an overload, that is the user's problem. If somesone gets hurt because of the overload the owner may be in trouble with the law." In this country it sometimes seems that a truck must be designed to carry any load it may be called upon to handle.

Future Developments

With the advent of unusual loads, such as long electronic assemblies or missiles, new and improved equipment for handling was found necessary.

The safe handling of atomic materials presents a whole new set of problems to the equipment designer:

Lead covered cabs for operators sometimes weighing far more than the load to be carried.

Remote control of trucks guided by means of captive television circuits.

Each of these new problems must be carefully considered by the truck designer. In every instance safety is his first consideration.

We cannot yet consider the driverless truck. We are thinking about it, but these developments are gradual and slow. The time will come when high rate warehousing will be done automatically. Since these problems are basically economic, it may well develop that the "breakthrough" will occur in the handling of some "exotic" material where the value of the material or the inherent hazards in handling may make the cost worthwhile. In every instance the desirable handling equipment will be the safe equipment. Undoubtedly our opinions on safety will change—as our knowledge of the problem increases and as the problem itself changes. Nevertheless, if these new designs are to be acceptable, they must be safe.

From an address presented at the 38th Massachusetts Safety Conference. Pictures by courtesy of The Yale & Towne Mfg. Co.

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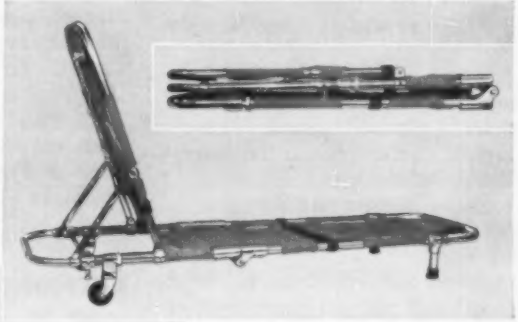

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Engines and Gas Turbines

A new standard for the installation and use of combustion engines and gas turbines has been published by the National Fire Protection Association. Developed by the NFPA Committee on Internal Combustion Engines, of which Elmer O. Mattocks of the American Petroleum Institute, New York, is chairman, and J. A. McGucklin of the Philadelphia Electric Company is secretary, it was adopted at the Association's 1959 annual meeting. It replaces former standards which NFPA began developing as early as 1905.

The new standard covers both internal and external combustion engines using gasoline and other fuels, also gas turbines which are coming into increasing use. This type of equipment, if properly installed, has a very good fire record, but involves serious fire hazards when proper installation practices are not followed.

Copies of the new standard (NFPA No. 37, 16 pages, 50c per copy) are available from the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.

Mechanical Guarding

This 58-page bulletin issued by the U. S. Labor Department's Bureau of Labor Standards discusses mechanical guarding and outlines some broad principles applicable to all guarding situations. Some 111 drawings show the techniques of mechanical guarding as applied to specific machines, both old and new.

Intended primarily for those with responsibility in the field of mechanical guarding, it will be helpful to State safety inspectors, insurance field safety engineers, plant safety men, and designers of new machines seeking to eliminate or control the hazards inherent in mechanical equipment.

Under the direction of Robert D. Gidel, Chief, Division of Safety Standards and Services, the text and drawings were developed by William G. Griffin and Sheldon W. Homan of the Bureau's staff.

Copies are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 40 cents a copy.

Recreational and Welfare Facilities

If your community, industry, or other organization is planning the construction of welfare or recreational facilities, you may find valuable guidance in a Navy publication on such activities which has just been released to the public through the Office of Technical Services, U. S. Department of Commerce.

Information on the design, construction, and maintenance of swimming pools, gymnasiums, auditoriums, tennis courts, chapels, and other installations for improved physical, mental, and spiritual fitness are included. Emphasis is placed on providing facilities at a reasonable cost while holding fire and health hazards to a minimum.

The design factors, formulas, and graphs are intended as engineering guides for use in solving structural problems. They include practices in planning for proper acoustics, seating arrangements, lighting, and other considerations. Recommended dimensions, construction materials, and safety measures are presented.

The report, PB 151980 "Special Service (Welfare and Recreation) Facilities," Bureau of Yards and Docks, U. S. Navy, Sept. 1953, may be ordered from OTS, U. S. Department of Commerce, Washington 25, D. C. It contains 62 pages, price $1.75.

Pamphlets On Flammable Metals

A new guide for fire and explosion prevention in plants producing and handling zirconium has just been published by the National Fire Protection Association on recommendation of its Committee on Combustible Metals. Hylton R. Brown of the U. S. Bureau of Mines is Chairman of this committee. Other standards produced by the same committee and adopted by the NFPA last year include the Storage and Handling of Magnesium (NFPA No. 48) and the Standard for the Production, Processing, Handling and Storage of Titanium (NFPA No. 481).

Zirconium is a metal increasingly used in industry which has unusual fire properties and requires special safeguards. In certain forms it is pyrophoric and will ignite spontaneously and when once burning cannot be extinguished by conventional smothering agents. Water greatly accelerates combustion. However, in massive form the material does not readily burn.

Outlines Safeguards

All these properties are discussed in the pamphlet which outlines safeguards for fire prevention, dust collection, fire protection, and the disposal of waste materials.

All three of these pamphlets are available from the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts: Zirconium (NFPA No. 482M, 16 pages, 40c); Magnesium (NFPA No. 48, 24 pages, 50c); Titanium (NFPA No. 481, 32 pages, 50c).

Plastics Safety

A Plastics Safety Handbook has been produced by The Society of the Plastics Industry, Inc. in cooperation with the National Safety Council. This Handbook is the first such publication devoted entirely to safety for the plastics processing industry.

The Plastics Safety Handbook is the result of several years of voluntary work by specialists in the field of accident prevention. Every chapter has been written by volunteers experienced in each particular subject. The more than 200 pages cover extensively subjects applying particularly to the plastics industry such as Fire Prevention, Health and Hygiene, Inspection, Good Housekeeping, Machinery, Maintenance, Materials Handling.

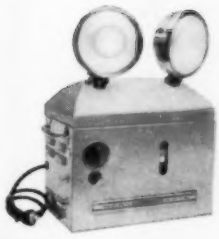
Includes Processes

Many processes in the plastics industry are specifically covered, with the latest safety methods and practices explained in detail, such as calendering, coating, casting, compression and transfer molding, extruding, injection molding, laminating, mechanical finishing, reinforced plastics, thermal forming, tool and die making.

There are also chapters detailing the planning for safety, maintaining of personnel's interest in safety, analysis of the cause of accidents, the keeping of accident records and the economic and sociological reasons for accident prevention programs.

There are 128 photographs, charts, diagrams, tables and report forms illustrated throughout this handbook, as well as numerous suggestions on ways and means of promoting greater safety in the plastics industry.

Supporting the Chairman in this extensive undertaking were fifty-five individuals representing thirty-nine companies identified with the plastics industry and the field of accident prevention. Copies of the Plastics Safety Handbook may be obtained from The Society of the Plastics Industry, Inc., 250 Park Avenue, New York 17, New York. Single copies are $5.00, plus postage. Quantity prices are also available.



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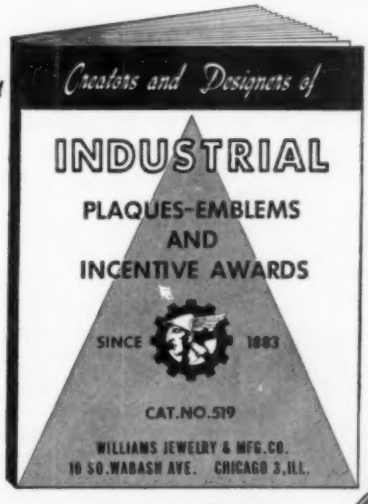

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Edited by HENRY M. GROSMAN
Counselor at Law, Newark, N. J.

MEMBER . . . . . .
Master Superior Court, New Jersey American Bar Ass'n, New Jersey Bar Ass'n, Chairman, Committee on Workmen's Compensation, New Jersey Bar Association National Federation Insurance Counsel Past Commander, American Legion, Post 10, ... Newark, N. J.

INJURY FROM TRUCK—Not Arising Out of and In The Course of the Employment—Causal Connection

The lower court erred in awarding the claimant, a mortar mixer on a construction job, compensation for an injury sustained when his truck brake "gave way" and the truck, rolling backward, struck him and broke his leg. The evidence indicated that the claimant's duties required him to be on the job by 7:30 a.m. in order to have the mortar prepared for the brickmasons. He drove to work in his pick-up truck, pulled out the hand brake, but was struck by his truck when it rolled backward. The claimant's employer did not provide for his transportation, and his truck was not used in the performance of his work. The premises on which the truck was parked belonged to a school. The court held that the claimant did not show that the accident was connected with or incident to the performance of the duties of his employment. It ruled that the evidence failed to disclose any causal connection between the conditions under which the claimant's work was required to be performed and the injury for which he claimed compensation. The risk of injury resulting from the claimant's using his own vehicle as a means of transportation to and from work was not connected with or incident to the employer-employee relationship. Reversed.

Evans v. Jones-Wilson, Inc.; South Carolina Supreme Court. No. 4489. November 2, 1959.

HEART CONDITION—Heat—Strain and Exertion—Causal Connection

The lower court properly awarded the plaintiff compensation for a heart attack suffered in the course of delivering an address to a P.T.A. sponsored dinner meeting. The evidence showed that the plaintiff had been in good health, with no manifestation of cardiac or circulatory illness. The plaintiff had to deal with the delicate problem of racial integration in the city schools. Upon arriving at the school for the dedication dinner, he found the room jammed with about 200 people, many of whom did not belong to the P.T.A. The evidence showed that there was trouble with the school's heating system. The plaintiff was extremely nervous during his speech because he felt what he conceived to be an unfriendly attitude of some of those present. He brought his speech to an abrupt close, went out for air and collapsed. The treating physician diagnosed his illness as arteriosclerotic heart disease and acute myo-cardial infarction. The court rejected the defendant's (Board of Education's) contention that the plaintiff's disability was not caused by a compensable accident. The court ruled that there was a causal connection and an unusual strain between the emotional events of the P.T.A. sponsored dinner and the attack. Affirmed.

McClain v. Board of Education, City of Woodbury, N. J.; New Jersey Supreme Court. No. A3. Sept. 28, 1959.

PRE-EXISTING HEART CONDITION—Causal Connection—Finding of Fact

The board properly found that the decedent's accident was not caused by a heart attack where the cause of the accident was unknown. The decedent, a beer salesman, while driving in the course of his employment struck a utility pole and was found dead. The carrier commenced payment of death benefits and filed a claim for reimbursement alleging a pre-existing heart condition. The employer knew that the decedent had a pre-existing heart condition. The evidence showed that the accident happened on a clear day, that there were no skid marks on the road, and that the car was in good condition. The testimony of two doctors that a heart attack followed by fainting or blindness could have caused the accident was only speculation as to the cause of the accident and therefore, the court held, not binding on the board. The board properly discharged the special fund finding that no heart attack occurred before the car struck the pole, and therefore that a pre-existing permanent impairment was not involved in the subsequent injury. There also was evidence that the injuries received in the crash were sufficient to cause death. Affirmed.

Connolly v. Piel Brothers; New York Supreme Court, Appellate Division, Third Judicial Dept. No. 1414. November 13, 1959.

(Continued on page 57)

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Who was to blame? Those who put it on the cornice? The clean-up men? The derrick operator? The wind? All had a hand in the accident. And that's the way a lot of accidents are made! If just one element had been different, it never would have happened!
As we see it: The safety of others often depends on you.

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packed with pictures, alive with animated cartoons, touched with humour that gives snap to your message, it makes safety interesting and down to earth. Twelve times a year it covers accident hazards. Across the nation leading industrial firms state it's the only safety paper their employees will read . . . and take home to their families.

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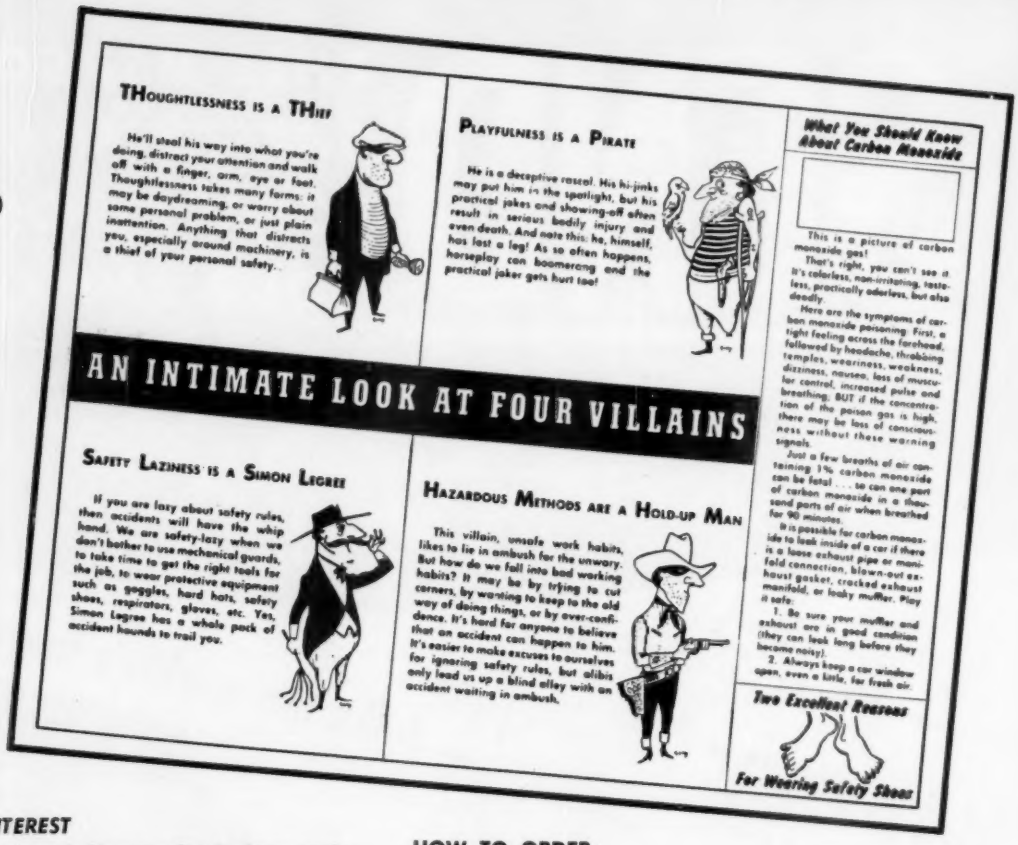
(Pages 2 and 3)


THOUGHTLESSNESS IS A THIEF
He'll steal his way into what you're doing, distract your attention and walk off with a finger, arm, eye or foot. Thoughtlessness takes many forms: it may be daydreaming, or worry about some personal problem, or just plain inattention. Anything that distracts you, especially around machinery, is a thief of your personal safety.
PLAYFULNESS IS A PIRATE
He is a deceptive rascal. His hi-jinks may put him in the spotlight, but his practical jokes and showing-off often result in serious bodily injury and even death. And note this: he, himself, has lost a leg! As so often happens, horseplay can boomerang and the practical joker gets hurt too!
What You Should Know About Carbon Monoxide
This is a picture of carbon monoxide gas!
That's right, you can't see it. It's colorless, non-irritating, tasteless, practically odorless, but also deadly.
Here are the symptoms of carbon monoxide poisoning. First, a tight feeling across the forehead, followed by headache, throbbing temples, weariness, weakness, dizziness, nausea, loss of muscular control, increased pulse and breathing. BUT if the concentration of the poison gas is high, there may be loss of consciousness without these warning signals.
Just a few breaths of air containing 1% carbon monoxide can be fatal . . . so can one part of carbon monoxide in a thousand parts of air when breathed for 90 minutes.
It is possible for carbon monoxide to leak inside of a car if there is a loose exhaust pipe or manifold connection, blown-out exhaust gasket, cracked exhaust manifold, or leaky muffler. Play it safe:
1. Be sure your muffler and exhaust are in good condition (they can leak long before they become noisy).
2. Always keep a car window open, even a little, for fresh air.
AN INTIMATE LOOK AT FOUR VILLAINS
SAFETY LAZINESS IS A SIMON LEGREE
If you are lazy about safety rules, then accidents will have the whip hand. We are safety-lazy when we don't bother to use mechanical guards, to take time to get the right tools for the job, to wear protective equipment such as goggles, hard hats, safety shoes, respirators, gloves, etc. Yes, Simon Legree has a whole pack of accident hounds to trail you.
HAZARDOUS METHODS ARE A HOLD-UP MAN
This villain, unsafe work habits, likes to lie in ambush for the unwary. But how do we fall into bad working habits? It may be by trying to cut corners, by wanting to keep to the old way of doing things, or by over-confidence. It's hard for anyone to believe that an accident can happen to him. It's easier to make excuses to ourselves for ignoring safety rules, but alibis only lead us up a blind alley with an accident waiting in ambush.
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THE FIRE FRONT

Check-Up For Watchmen's Keys

Most watchclock users recognize the need to keep their clocks in good repair. Periodic factory service will do that. But even a properly running clock may give a difficult-to-read record if your watchmen's station keys are worn or damaged, warns Richard C. Smith, Jr., vice president of Detex Watchclock Corp. To get the kind of record you need for proper supervision of your guards, **both** the clocks and the keys must be in first-class condition. Improper keys may even damage the clock's matrix. New keys are so inexpensive that it is false economy to use worn or damaged ones.

While watchmen's keys are designed and built for long use, even they will eventually show signs of wear. If the keys of your watchclock system have been used for some time, or if for some other reason they have had a lot of use, it's time to check the legibility of your record.

How can you tell if the keys are worn or your clock needs servicing?

Look at a recent tape or dial. If the impression is difficult to read, it's time for a complete check-up. You may need new keys or service to the clock itself.

Boiler Instruments Too Complex?

An oversupply of complex instruments, instead of providing safety and efficiency in boiler operations, may be paving the way for major catastrophes. There's nothing wrong with the instruments, which provide controls for the boilers and indications as to what's going on inside, M. L. Jones, principal power engineer for E. I. du Pont de Nemours and Company, Inc., told the Annual Meeting of The American Society of Mechanical Engineers. But "a sometimes oversold, highly instrumentized boiler frequently results in a management decision that no operator is required or that the unit can be maintained by anyone regardless of qualification," he said. Serious complications arise when such an operator is unable to interpret any malfunction of equipment and cannot take preventive steps to correct it. Failure to maintain the units correctly or to test them regularly also results in dangerous situations.

November Losses Rise

Estimated fire losses in the United States during November amounted to $78,582,000, the National Board of Fire Underwriters has reported. This loss represents an increase of 9.8 percent over losses of $71,539,000 reported for November, 1958, and an increase of 10.4 percent over losses of $71,160,000 for October, 1959. Losses for the first 11 months of 1959 now total $950,629,000, a decrease of 0.5 percent from the first 11 months of 1958, when they amounted to $955,743,000. These estimated losses include an allowance for uninsured and unreported losses.

Mr. Jones asked that ASME establish an operational procedure for protecting industrial furnaces from explosions. Such a code would augment the ASME Boiler and Pressure Vessel Code, provisions of which are enforced by law in most states.

In the present absence of a code for operational procedure, Mr. Jones suggested several courses to produce increased boiler safety. First, he said, the proper balance between automatic operation and qualified human supervision should be maintained, so that a highly trained man does not find himself nursing a set of gauges or a boiler operator be called on to be responsible for the interpretation of a set of complex instruments.

Secondly, the instruments should be completely suited to the boiler. Flame failure, or interruption of the flame in the furnace, for example, is a major contributor to furnace explosions, but it is very difficult to detect properly. From among the many different units available, the power engineer must select the type best suited to burner design, furnace design, number of burners, type of fuel and arrangement. This also leads to problems, continued Mr. Jones, because installation of additional units may "clutter up the front of a furnace to the point where maintenance becomes quite difficult." Instruments that give warnings but do not shut down the furnace except in case of extreme emergency are desirable, since startup in the time boilers are most likely to explode.

One of the most important deterrents to explosions is regular maintenance by trained personnel, Mr. Jones said. Today's instruments are electronic and electrical in operation and require more complex knowledge than a boiler operator may be able to bring to the task.

Campaign Against Rubbish Fires

Fire departments in 161 cities across the country are participating in a program to condemn flammable garbage containers and to stimulate public use of metal rubbish burners and metal fuel cans. All promotion material for the program is supplied free of charge to fire chiefs by the public relations department of the Galvanized Ware Manufacturers Council, Chicago.

The promotion package includes publicity materials for fire chiefs to use in newspapers and on radio and television, red labels for condemning illegal and unsafe containers and postcards called "Special Fire Notice."

The postcards are designed for use in the mail, but according to

the Council, many fire departments are having Boy Scouts and Girl Scouts distribute them to households.

Message of the cards states:

"Handle with Care . . . Trash . . . Gasoline.

Keep trash in covered galvanized steel garbage cans.

Avoid open bonfires.

Burn trash in covered metal rubbish burners.

If you have gasoline for a power lawnmower or outboard motor, keep it in a steel fuel can. Don't use glass bottles."

This is signed "Fire Department."

W. B. Thomas, commissioner of the Council, Cleveland, points out that the Council has conducted a similar program through public health departments for many years —1,500 cities are condemning unsanitary garbage receptacles. This work was recognized last year by the American Society of Association Executives as being outstanding among industry-sponsored public relations programs.

Two Fire Films

A preview of two new fire prevention films was presented recently by the National Board of Fire Underwriters. One of the films is designed for showing before primary and elementary school children and is entitled "Penelope Changes Her Mind."

The film, an animated cartoon, is the story of a little girl, Penelope, her brother, Timmy, and a dog, Ruff, in which they are told what causes fire and other facts about it.

Tex Antoine, television announcer, supplies the film commentary. The film was produced for the National Board by Klaeger Film Productions, Inc.

The other film, for adults, is entitled "The Challenge," and is a revised version of the National Board's popular film, "Crimes of Carelessness." It was produced by Audio Productions, Inc., in cooperation with the National Board.

Both films are in color, and run approximately 10 minutes each.

Prints of these latest additions to the National Board's film library, will be available for general distribution through the Bureau of Communication Research, Inc., 267 West 25th Street, New York 1, N. Y. On the west coast they will be available through the National Board's San Francisco Office at 465 California Street, San Francisco 4, Calif.

Fire Protection for Shopping Malls

Advance fire protection planning in the construction of shopping malls has been urged by the National Board of Fire Underwriters. In a special bulletin issued by its Committee on Engineering, the National Board said adequate fire safety planning was a requisite in the establishment of shopping malls both in the suburbs and those now being built in the downtown sections of cities.

The construction of a shopping mall in the heart of an established business area usually calls for the blocking off of one or more streets to vehicular traffic, and setting up of the enclosed area for pedestrian use only.

"It is apparent that unless proper consideration is given to fire protection in planning these malls, serious problems could be created," the National Board said.

"It is important, therefore, that the fire, water, and building departments be consulted so the formation of a mall will not have an adverse effect on the municipal fire protection," the Board added.

"Emphasis should be placed on certain fire protection features from the start of any planning," the Board said. It added that it also is well to keep in mind that a serious fire involving a life hazard might develop even while the mall is under construction.

"Buildings facing on the mall will have at least the same conflagration possibilities as similar buildings fronting on a street," the Board said. "Conflagration possibilities are usually the result of large unsprinklered areas, excessive heights, exposed windows, and unprotected vertical openings. Other similar buildings may be found on adjacent side streets close to the mall. The conflagration potential will continue to be severe in many sections of these districts regardless of whether the buildings have new fronts and existing streets are replaced with malls," the Board added.

Some pertinent fire protection features which should be taken into consideration incude:

1. An open area extending the entire length of each block of the mall should be provided for apparatus access to and operations at any possible fire scene. This area may be paved in a conventional manner or with ornamental sidewalk slabs and be landscaped with grass or small shrubs. No trees or permanent obstructions should be permitted in this area, and it should be at least 12 feet wide. Additional width may be needed in many cases to allow sufficient space for fire department operations. In order to avoid the placing of fire apparatus too close to buildings for satisfactory use, no portion of this area should be between the former curb line and the building line.

2. Apparatus movement over existing sidewalks should be avoided as some basements extend from the building line to the original curb line and the sidewalks will probably not be able to handle the apparatus weight.

3. All buildings, especially those two or more stories in height, should be readily available to aerial ladder and ladder pipe operations.

4. All hydrants should be readily accessible to pumpers. The removal of hydrants should be avoided as mid-block hydrants are just as important to buildings along a mall as to buildings along a conventional street.

5. Valve boxes or manholes through which the valves on street mains or on buildings and fire service connections are operated should not be covered over by any ornamental structures, landscaping, paving or other means and should be readily accessible at all times. Valve location records should be checked to see if any changes are needed as a result of construction in connection with the mall.

6. Siamese connections to sprinkler and standpipe systems should not be blocked.

(Continued on page 38)

BUILDING SEPARATION FOR FIRE PROTECTION

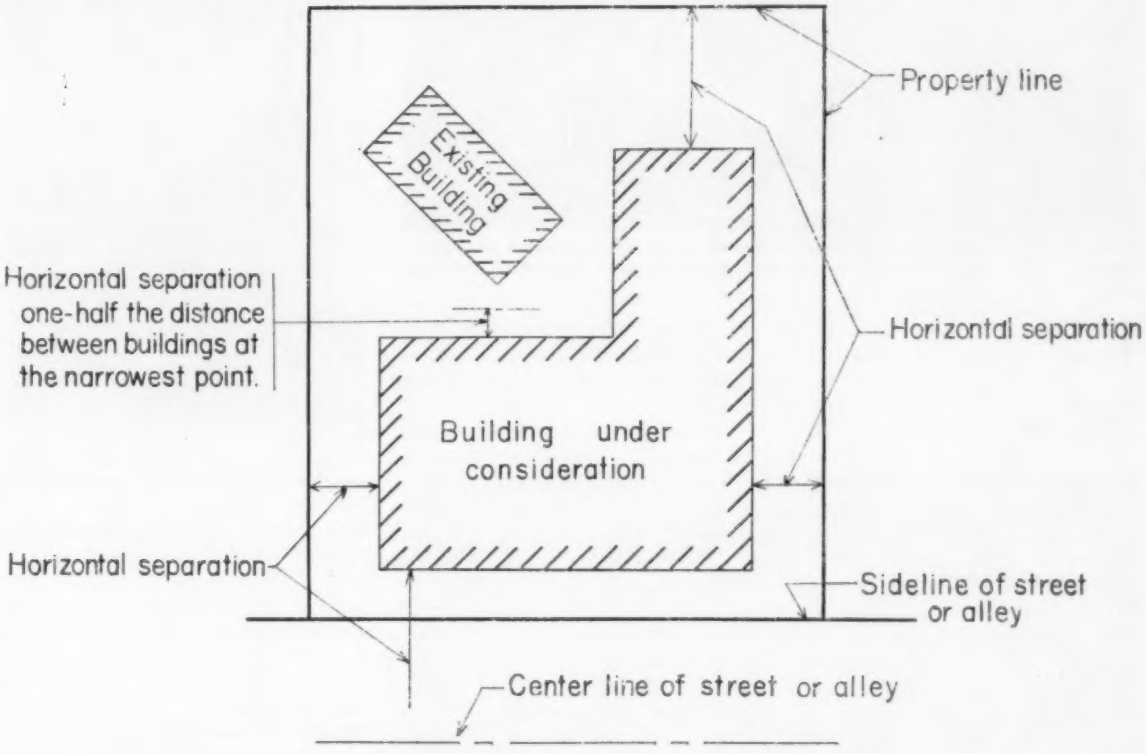
Property line
Existing Building
Horizontal separation one-half the distance between buildings at the narrowest point.
Horizontal separation
Building under consideration
Horizontal separation
Sideline of street or alley
Center line of street or alley

Illustration showing how horizontal separation is measured.

One of the purposes of an exterior wall of a building is to protect the interior of a building from a fire originating outside the building and to protect adjacent buildings from fire originating within the building. Therefore, such walls should have adequate fire resistance to prevent the spread of fire and be able to remain in place when exposed to fire. A blank, fire-resistive wall constitutes an effective barrier against the spread of fire. A wall with openings such as windows and without some means of protection is considered an incomplete barrier.

Protection may be afforded a building by locating it a sufficient distance from adjacent structures to reduce the probability of the spread of fire, according to a bulletin issued by the National Board of Fire Underwriters. As the amount of open space between buildings is increased, the fire exposure hazard is decreased. Therefore, the fire resistance of a wall may be reduced and the total area of windows in a wall increased as the distance is increased from the wall under consideration to the property line or nearest line to which a building is or may be built.

Determining Resistance

For use in determining the fire resistance needed and window area allowable in a wall under consideration, **horizontal separation should be considered as the distance from the wall under consideration to a property line, to a line half way between buildings on the same lot, or to the center line of the street or alley.**

Horizontal separation distances up to 30 feet as specified in the National Building Code are based on the assumption that a permanent open space of 60 feet provides sufficient protection against exposure hazard to permit exterior walls of two buildings to face each other with no fire resistance rating and with no limit on window area in these walls, except for vertical separation between windows as specified for certain conditions of construction and occupancy.

Drawing by courtesy of the National Board of Fire Underwriters.

pencil

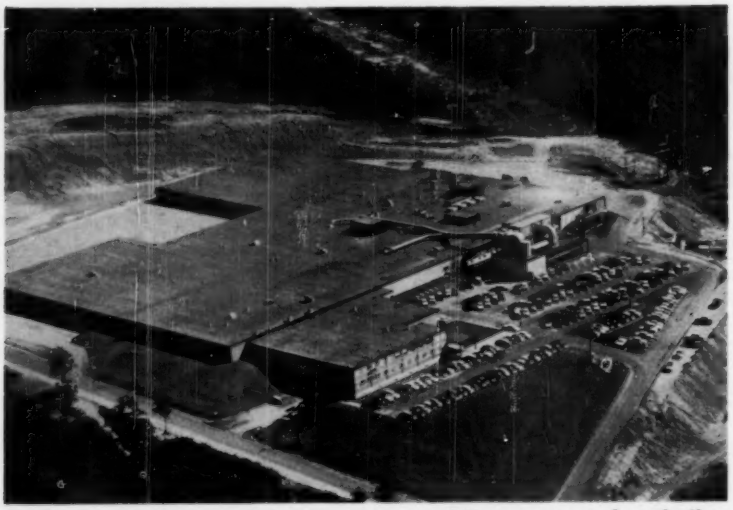

Fig. 1—The new Eberhard Faber plant boasts a full seven acres of production space. Six miles of straight line, integrated facilities are reward of planning.

In 1952 the Eberhard Faber Pencil Company realized that it had completely outgrown its 86 year old Brooklyn, N. Y. plant. It needed additional space to diversify, promote research, and establish more efficient production lines.

Subsequently, after surveying many locations, it chose a site in Crestwood Park, a large industrial development in Wilkes-Barre, Pa., for its new plant. In 1956 ground was broken for the building and early 1957 saw the company in full production at its new facility. (Figure 1)

When the plant doors opened, the public was impressed by a new, one-floor, seven acre plant located on a thirty-eight acre tract. Six miles of straight line, integrated production facilities were the reward for extensive planning. $4 million was spent to achieve the new home of world-famous Mongol pencils.

With this investment, protection of the plant against inventory or stock loss and damage to production machinery which would result in "down time" became vital.

Eric Q. Bohlin, vice president in charge of manufacturing, expresses it this way. "We realize we work largely with wood, a flammable material. Further, virtually every coating we put on lead or wood to finish pencils is flammable. Therefore, we took steps to design a plant which is as inherently fire-safe as modern materials and machinery can make it. Secondly, working with our insurance underwriter, we worked out a fire extinguishing equipment program which we feel makes us largely self-reliant."

Fig. 2—For all dangerous plant areas carbon dioxide portables or wheeled units of bigger capacity are provided.

Most of the work in the actual development of the program fell to Maintenance Engineer John Lonnie. His hours of planning and days of labor have paid off. Today the Eberhard Faber plant stands as a fire-resistant, steel-frame structure divided into seven production and storage areas. All of these spaces are divided by fire walls with self-closing fire doors which normally are kept closed.

Fig. 3—All columns housing fire equipment are painted a bright aluminum and red and are visible from any location.

Over-All Protection

The plant is 100 percent water sprinklered. All sprinkler lines are wet, except for one open dock which has a dry line, and sprinkler heads are set for 165 degrees F. (One high temperature operation section has heads set for 320 degrees.)

Mr. Lonnie states that uphill from the plant is a large, spring-fed lake owned by a water supply company from which the plant draws its water. Even during dry spells it

plant erases fire

furnishes a reservoir many times the capacity considered prudent for a plant the size of Eberhard Faber's.

The drop between the lake and the plant develops a gravity-fed main pressure of from 175-200 psi for sprinkler, standpipe, and hose rack lines. Incidentally, the main pressure gauge is directly opposite Mr. Lonnie's desk and is visible at all times.

The main from the lake, in addition to flooding all plant lines, flows into an out-of-door, 10″ main which encircles the plant and has hydrants spaced approximately 100′ apart. All valves on hydrants and standpipes have labels stating their normal, proper settings.

Water hose racks with 50′ of hose are provided at about every hundred feet within the plant. This means that at almost any location four hoses can be available for use on a blaze. All hoses are equipped with combination straight stream and fog nozzles.

Portable Extinguishers Dot Plant

"The last thing we want to happen in case of fire," Mr. Lonnie says, "is to have sprinkler lines open. That means a problem of flooding and water damage which we want to avoid if possible."

Working with the representative of a fire extinguishing equipment manufacturer, Lonnie worked out a portable extinguisher plan. First each smaller area of the plant was analyzed to see what kinds of fire could occur in each. Then the possible severity of these fires was determined. As a result of these findings, portable fire extinguishers of capacities capable of handling any incipient blaze were installed.

When the plant opened, more than 150 portable extinguishers—largely carbon dioxide, water, antifreeze—were available. A few 50-lb. wheeled carbon dioxide units also were placed in strategic areas. (Figure 2)

Mr. Lonnie's plan included painting columns housing portables and/or water hose racks a bright conspicuous aluminum and red. (Figure 3) From any point in the plant, one can't ignore the location of a number of nearby "fire columns."

All portables are checked monthly by a member of the Maintenance Department and all have "how to use" and "on what" stickers affixed to them in addition to recharge record cards.

One of Mr. Lonnie's pet projects was building of a hand-drawn, emergency truck, so designed that it can enter any part of the plant.

Fig. 4—Engineer sounds fire alarm for drill. In real emergency plant is alerted, advised of location of fire.

Immediately a general plant alarm is sounded from a central clock station just outside Mr. Lonnie's office.

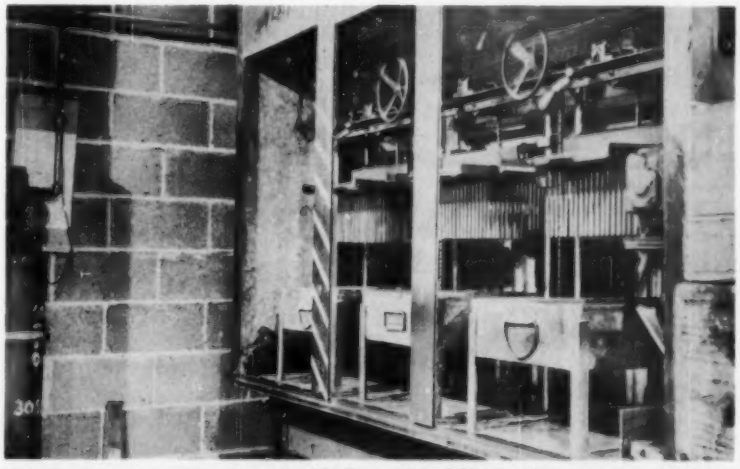

Fig. 5—An automatic carbon dioxide fire extinguishing system was provided for this machine which automatically dips racks of pencils in flammable laquer bath.

An inventory of its equipment reveals that it has two 15-pound carbon dioxide portables, two 2½-gallon soda acid extinguishers, two pairs asbestos gloves, two universal gas masks, six fire department tarpaulins 12′ x 14′, one 1½-inch fog nozzle, six neoprene coats and hats, a crow bar, and an axe.

Fire Alarms

In the event of fire, alarms are telephoned to the central telephone switchboard. The operator in turn notifies Mr. Lonnie and his staff. (Figure 4) Almost simultaneously, the plant's audio system also sounds the alarm and gives the fire location.

Initial fire brigade protection for the plant was developed around the maintenance personnel and guard force. When an alarm sounds, each man has assigned duties to perform. All are trained in fire fighting and salvage, and at each test alarm they report immediately to the fire scene complete with the emergency truck.

At the moment Mr. Lonnie is training fire brigades from among the plant's 450 workers using as the

nucleus volunteer firemen from nearby communities employed by Eberhard Faber. Each plant operating division soon will have its own brigade ready to swing into immediate action in an emergency. As now happens, they will be backed up by the main plant maintenance brigade.

Heading up each plant area brigade will be that area's superintendent. At the moment his only duties in an emergency are to report the fire and see that employees evacuate the area.

Good Housekeeping

In a plant like Eberhard Faber's, good housekeeping is particularly important. It's up to it, too. The plant is as spotless as production permits, and at all day time breaks, cleaning details swing into action. Many of them are equipped with industrial vacuum cleaners. At night, of course, the plant gets a meticulous cleaning.

As might be expected, all of the plant areas which contain wood working or varnishing-coating operations have high volume air exhaust systems. In some spaces a complete change of air is effected every minute.

It is interesting to note that the daily accumulation of wood particles is sufficient to fire one of the plant's boilers during the daytime shift.

One Carbon Dioxide System

The company has one machine which, except for loading and unloading, automatically dips racks of pencils into a bath of flammable, colored lacquers. For this operation Eberhard Faber provided an automatic carbon dioxide fire extinguishing system. (Figure 5)

The moment fire flashes, rate-of-temperature-rise fire detectors trip an adjacent 100-pound cylinder of carbon dioxide. The pressurized fire smothering gas floods from the cylinder and passes through piping to the coater where it is discharged from nozzles in sufficient volume to reduce oxygen to a point insufficient to support combustion. The fire is out almost the moment it flashes, without damage to the machine, contamination of the varnish, or loss of work-in-process. Down time is eliminated.

Built into the carbon dioxide piping are pressure-operated switches and trips which are actuated by the passage of the gas. They cause alarms to sound and shut down the machine and its ventilation equipment.

"No Smoking" Rules

One of Eberhard Faber's strictest rules is no smoking anywhere in the plant. It rightly knows that any relaxing of this rule means a gradual deterioration of safety for both employees and the plant itself.

"It takes time to get your entire fire safety program thoroughly established," Mr. Lonnie states. "However, the day we took possession of the new building we had what I felt was an adequate program to safeguard the plant. Since that time, it has been continually tightened and improved. Within a few months when our department fire brigades will have been exhaustively drilled, Eberhard Faber will have a fire safety program second to none."

Pictures by courtesy of Walter Kidde & Co., Inc.

Fire Protection
(from page 34)

7. Visibility and accessibility of fire alarm boxes should not be impaired.

8. Off-hour delivery of goods may have to be made along the mall in some blocks. This might increase the fire hazard during hours when the stores are not open for shopping and necessitate fire prevention inspections during these hours.

9. The question of prompt apparatus response to other sections of the district must be considered in determining which cross streets are to be extended across the mall.

10. The general response pattern may have to be readjusted because of the closing of one or more streets to normal apparatus travel.

11. Preplanning of a fire attack may have to be changed from existing methods. Hose lines may have to be hand laid from pumpers and hose trucks, and aerial ladder operations may have to be revised.

12. The fire department will usually experience some additional delay in getting into operation due to the general layout of the mall and because of the necessity to clear the area of benches and other removable obstructions. Alleys, which frequently are used for fire fighting operations, may be more congested by delivery trucks.

13. Operations at a fire in a building along a mall may possibly result in moderate to extensive damage to decorative features of the mall.

14. Placing a full or partial canopy over the mall would not only definitely restrict fire department operations but also could increase the possibility of a fire spreading from block to block across the mall. Any areas entirely enclosed should be provided with automatic sprinklers. A canopy or series of awnings extended from building face to curb line may present a serious obstruction to operations. All canopies should be of noncombustible construction.

"As soon as the mall is completed," the Board said, "the fire department should make a series of trial runs into the mall to determine how efficiently the apparatus can be distributed and utilized in the mall area."

Assistance in connection with fire protection problems that may arise in the development of a shopping mall can be obtained upon request from: National Board of Fire Underwriters, Engineering Department, 85 John Street, New York 38, N. Y. In the Middle West, write to: National Board of Fire Underwriters, 222 West Adams Street, Chicago 6, Ill.; and, if West of the Rockies, to: National Board of Fire Underwriters, 465 California Street, San Francisco 4, Calif.

Miami Plan For Safer Drivers

A plan to make some 4,400 City of Miami employees more careful drivers and to save tax dollars on reduced accident insurance premiums has been inaugurated as part of the city training and safety program. The plan, under direction of

Frank J. King, is the latest phase of a continuous safety course instituted in 1956 by the Miami Commission and City Manager Ira F. Willard.

35-Hour Course

"We're starting the Smith System of No-Accident Driving," King said. The system, developed by a top traffic engineer, is a 35-hour course in safe handling of vehicles. King and two other city employees recently finished the course and are passing it on to representatives of each department. Once the teachers are taught, the program will be extended to every city driver, King said.

Because of Miami's attempts to cut accident rates and damage costs, its safety program has come under study by other municipalities throughout the country.

"We are trying to develop defensive driving," said King, whose program extends into every one of Miami's 32 departments and divisions. The driver manual prepared by the training division defines defensive driving as "no daydreaming, no traveling conferences and no business other than driving."

So far, it has paid off in lower insurance costs and lower accident rates, King said. Recently, a local insurance adjustor reported the Miami Fire Department alone will save more than $3,000 in liability and damage premiums during the coming year.

In all, insurance premiums covering the city's 1,100 vehicles amount to more than $135,000 annually. The city's accident rate has dropped, as a result of the training program from 4.7 for each 100,000 miles of driving in 1957 to 3.6 this year.

Stresses Proper Sighting

The Smith system stresses the principle of sighting properly as the best way to avoid driving accidents. Its five tenets are: Aim high in steering; get the "big picture"; keep your eyes moving to avoid blank or fixed stares; leave yourself an out by not following too closely; and make sure you are seen by other drivers through horn blowing or blinking of lights.

Retraining those employees who have completed some of the courses of instruction is an important phase of the city's safety program, especially in the case of firemen and police. Another vital segment of the overall program is the part played by the Miami Accident Review Board. The seven-man board, which includes the supervisor of the department involved, investigates and passes judgment on all city accidents.

In the fiscal year which ended June 30 the board reviewed 354 accidents and questioned more than 200 city drivers who were involved. It came up with the following summary: unavoidable accidents, 162; chargeable, with city driver at fault, 119; not chargeable, 79. The panel ordered 35 letters of reprimand, four mechanical tests of driver skills, 15 traffic school terms and three employee suspensions.

"We're concerned mainly," a board spokesman said, "in determining what could have been done to prevent the accident."

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1958 Injury Rates

Final work-injury rates for 1958, released by the U. S. Department of Labor's Bureau of Labor Statistics, showed few significant changes from 1957. The all-manufacturing injury-frequency rate was at an all-time low in 1958 with 10.9 disabling injuries per million man-hours worked, but this rate was only 4 percent below 1957. At 46.8, coal mining was fractionally lower than in 1957. Somewhat greater declines occurred in the rates for some of the smaller individual classifications in the various nonmanufacturing groups.

On the other hand, the average frequency rates for construction and trade were slightly higher than in 1957. Rates for most classifications in transportation, utilities, finance, service, and government showed little change.

Improved Record

Although the 1958 record reflects no spectacular gains in accident prevention over the previous year, the improvements recorded in recent years were retained. Over the long term, the 1958 experience in most industries was substantially better than in the years immediately following World War II. The 1958 all-manufacturing frequency rate was 45 percent below the 1946 level and 25 percent below 1949. The contract construction average was down 23 percent from 1946, and the rates for most mining activities were substantially lower. Trade as a whole has shown little improvement.

Highest Rate

The highest injury-frequency rate reported in the 1958 survey was 63.8, for logging. Anthracite mining had a rate of 60.8, and several other mining classifications showed rates of over 50. City sanitation departments had a rate of 56.1; roofing and sheet-metal work, 44.8; poultry dressing and packing, 43.1; and sawmills, 42.7.

The lowest rate recorded in the survey was 0.7 in the telephone communications industry. Banks and insurance companies had rates of 2.2, and a number of Government agencies reported low rates. Among the lowest rates for manufacturing industries were: 2.3 for the radio tubes industry; 2.4, explosives; 2.5, synthetic rubber; 2.6, miscellaneous communication equipment; 2.7, synthetic fibers; and 2.9, aircraft.

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Manufacturing

In manufacturing, injuries reported in the 1958 survey averaged 66 days of disability per case. Out of each 1,000 disabling injuries reported, 4 resulted in death and 68 in some degree of permanent impairment. The remaining 928 were temporary in nature, with an average of 19 days disability per case. The standard severity rate for manufacturing was 763 days of disability for each million man-hours worked in 1958, little changed from 1957.

Work injuries in contract construction averaged 90 days per case, and the severity rate was 2,553. In trade, the corresponding figures were 44 and 485.

Injury Totals

On the basis of the survey data and other available information, it was estimated that a total of 1,820,000 workers were disabled by on-the-job injuries during 1958. Of these injuries, 13,300 resulted in death and 76,700 in some degree of permanent physical impairment. Manufacturing and trade each accounted for 340,000 work injuries, and 300,000 were attributed to agriculture.

Elevator Guide

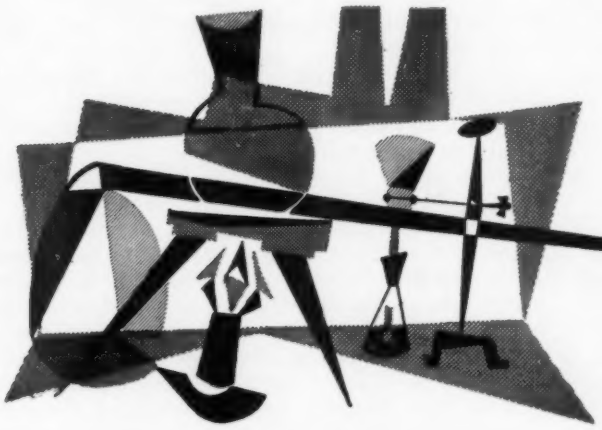
"Elevators: Electric and Electro-Hydraulic Elevators, Escalators, Moving Sidewalks and Ramps," is the title of a newly-published book which presents a comprehensive and practical treatment of vertical-transportation equipment as used in office buildings, hotels, apartment houses, private homes, department stores, railway stations, garages, industrial plants, and other buildings. It provides a useful and authoritative source of information for electrical workers and mechanics interested in the construction, operation and maintenance of vertical-transportation equipment, for elevator maintenance men and operating engineers, and for contractors and employees doing elevator repair work.

The range of subjects covered includes types of machines, both direct and alternating current; methods of roping; overspeed governors and safeties; microleveling; elevator-door operating equipment; and signal systems. For completeness, there is also information on moving sidewalks, ramps, and escalators.

Complies with Code

Revised and updated to comply with 1955 American Standard Code for Elevators, Dumbwaiters and Escalators, the book contains latest standards and information on manlifts, screwlifts, freight elevators, garage automatic-parking elevators, home elevators, and stairlifts. There is also new information on car and hall door-reversal devices, photo- and cold-cathode tube hall and car door protection, car overload protection, freight elevator doors, electronic push buttons, car-position indicators, and many of the other modern devices in use today.

The author, Fred A. Annett, is a Contributing Editor of *"Power"* magazine, and has been associated with the elevator industry for nearly fifty years. Further information may be obtained from McGraw-Hill's Book Information Service, 327 W. 41st Street, New York 36, New York. The price of the illustrated 400-page volume is $11.50.



industrial hygiene

Four New Hygiene Guides

The American Industrial Hygiene Association has announced the publication of four new additions to their list of Hygienic Guides, bringing the total to eighty-four. Titles of the new guides are Parathion, DDT, Thorium and Its Compounds, and Teflon TFE-Fluorocarbon Resins and Their Decomposition Products.

The Guides are composed of four main divisions: 1) Hygienic Standards, 2) Significant Properties, 3) Industrial Hygiene Practice, 4) Specific Procedures. An exhaustive list of references is given for each guide.

The Hygienic Guides bring together in one publication all of the pertinent available information on toxicity, evaluation of exposure, control measures to be taken, and medical procedures to be followed in the treatment of persons suffering from over-exposure.

The Guides can be procured from the offices of the American Industrial Hygiene Association at 14125 Prevost, Detroit 27, Michigan, at a cost of 25¢ each subject.

Need For Controlled-Air Enclosures

The strong push in metallurgical, biochemical, and nuclear research has brought about increasingly stringent requirements for controlled-atmosphere enclosures, it was stated recently by Bernard I. Blickman, Manager of Special Products Division, S. Blickman, Inc., at the 27th Exposition of Chemical Industries in New York. As a result, equipment manufacturers have found it necessary to develop new fabricating techniques for dry boxes, fume hoods, and similar equipment so that valid laboratory results will be assured and personnel handling hazardous materials will receive maximum protection.

According to Mr. Blickman, the super-careful handling of today's hazardous materials, such as toxic metals or radioactive isotopes, requires that all enclosures, apparatus, working surfaces, and even the walls, floors, and ceiling of the laboratory must be constructed with personnel safety in mind. Enclosures must be resistant to the hazardous materials housed therein and fabrication must be flawless. Through experience gained over the past several years, general specifications for these enclosures seem to be emerging, with the pattern pointing to a highly polished stainless steel interior, coved corners, and seamless one-piece construction made possible by specialized welding and grinding techniques. These fabrication features are necessary because any difficult-to-reach corner, or a crack, crevice, or microscopic pore might harbor hazardous residue and provide an obstacle to decontamination.

Recent developments in specific enclosures have been running at a fast pace, Mr. Blickman stated. The design of a modular enclosure allows a facility to use one or more of these units in a desired arrangement. Component parts allow the laboratory to adapt a combination of enclosures to its specific needs at any given time.

The A.E.C. has been responsible for a number of refinements in enclosures. A new plutonium glove box, specially designed by the New Brunswick, N. J., A.E.C. laboratory, features an all-clear sloping front to allow maximum visibility of the interior working area. The box is designed for high versatility and contains adequate space for equipment such as furnaces, spectrophotometers, balances, etc. One of the features is a guillotine-type air lock that opens and closes at the touch of a lever to allow the safe transfer of material from one box to another. Another advance has been the development of a dry box equipped with a new oil-free gas drying system for handling organic chemicals and the modern metals.

Smog Component Reduction

The Franklin Institute Laboratories has announced that it has used chromite catalysts and carbon monoxide to significantly reduce the amount of nitrogen oxides, one of the two main components of smog, sent into the air from automobile exhaust.

Institute scientists in experiments used chromites to aid carbon monoxide already present in the auto exhaust to reduce the amount of nitric oxide in the exhaust. The scientists conclude that with the reduction of nitric oxide sent into the air, in some experiments by more than 90 percent, the amount of smog formed would be greatly lessened. *(Continued on next page)*

Whether this new method of reducing photochemical smog will be the way to rid Los Angeles and other cities of eye-irritating smog has not as yet been determined, according to Dr. Nicol H. Smith, Franklin Institute Laboratories director. The chromite catalytic method, Dr. Smith said, holds great promise, but more study is required before it can be ascertained if the chromites will withstand the poisoning effects from lead, etc., found in the exhaust.

"If the chromites do remain stable in future experiments," Dr. Smith added, "they promise to be an economical means of reducing photochemical smog."

Sponsor Smog Study

The Institute Laboratories smog study was sponsored by the Air Pollution Foundation of San Marino, Calif., an organization dedicated to solving the Los Angeles smog problem.

Smog is formed by nitrogen oxides and hydrocarbons which emit from auto exhaust and react with the atmosphere.

"However, in the past," Dr. Smith explained, "most scientists concentrated on the elimination of residual hydrocarbons by oxidation, catalytic or noncatalytic, in order to control smog.

"Institute scientists investigated the alternative possibilities of eliminating nitrogen oxides by catalytic reduction. They found that zinc-copper chromite, iron chromite, barium-promoted copper chromite and chromium-promoted iron oxide are very efficient reduction catalysts which achieve over 90 percent reduction of nitric oxide.

"In addition, they also found chromites can induce over 90 percent oxidation of hydrocarbons and carbon monoxide, in the absence or presence of nitric oxide, when sufficient oxygen is present.

"Thus under certain conditions, chromites show promise of eliminating both constituents of smog."

Chromites have another advantage, according to Dr. Smith, in that they eliminate the need for additional equipment in a system to reduce smog. In the past to control the formation of smog by the oxidation of hydrocarbons, it has been necessary to provide a pump to bring in the additional air required to complete the oxidation. Such a pump adds to the complexity and cost of the treatment system. In using chromite catalysts to reduce nitrogen oxides, no pump is necessary.

Air Pollution work is continuing at the Franklin Institute Laboratories under the direction of Dr. James T. Roth, head of the Chemical Kinetics Branch of the Institute Laboratories.

Evaporator Solves Radioactive Wastes Disposal

Something new in evaporator design and construction has come forth to solve tricky atomic age problems in concentrating radioactive wastes which Consolidated Edison Co. of New York, Inc., must dispose of after its new 275,000-kilowatt Indian Point nuclear power plant on the Hudson goes into service in April, 1961.

Designed by Chicago Bridge & Iron Company, and currently under construction, the evaporator will be made entirely of nickel alloy and have an entrainment section of woven stainless steel six times the usual thickness. The design calls for a welded flangeless unit.

The unit will accept wash-down and purge water from the entire plant (reactor area, laboratory, laundry and filter backwash operations) and vaporize it so effectively that less than five parts in 100 million of dissolved solids are in the discharge. An ion-exchange unit will cut this minuscule amount to less than one part in 100 million, as safe as the Hudson River.

The concentrate of radioactive wastes—up to 30 percent dissolved solids—will be disposed of according to procedures of the Atomic Energy Commission and New York State.

The evaporator is engineered for a 6,000 pound-per-hour boil off, measures only 19 feet in height by 6½ feet in diameter, and has hairpin steam heating loops which may be cleaned by thermal shock. The mesh demister (entrainment separator) will be three full feet thick (4 to 6 inches being the most generally used in refinery practice), and every vessel weld will be completely inspected radiographically.

Built to ASME code for handling lethal fluids, the unit has been rated by Consolidated Edison as a primary vessel because the evaporator will handle water which has been used in the primary loop of the reactor steam generating plant. The unit concentrates all material requiring evaporation that leaves the plant.

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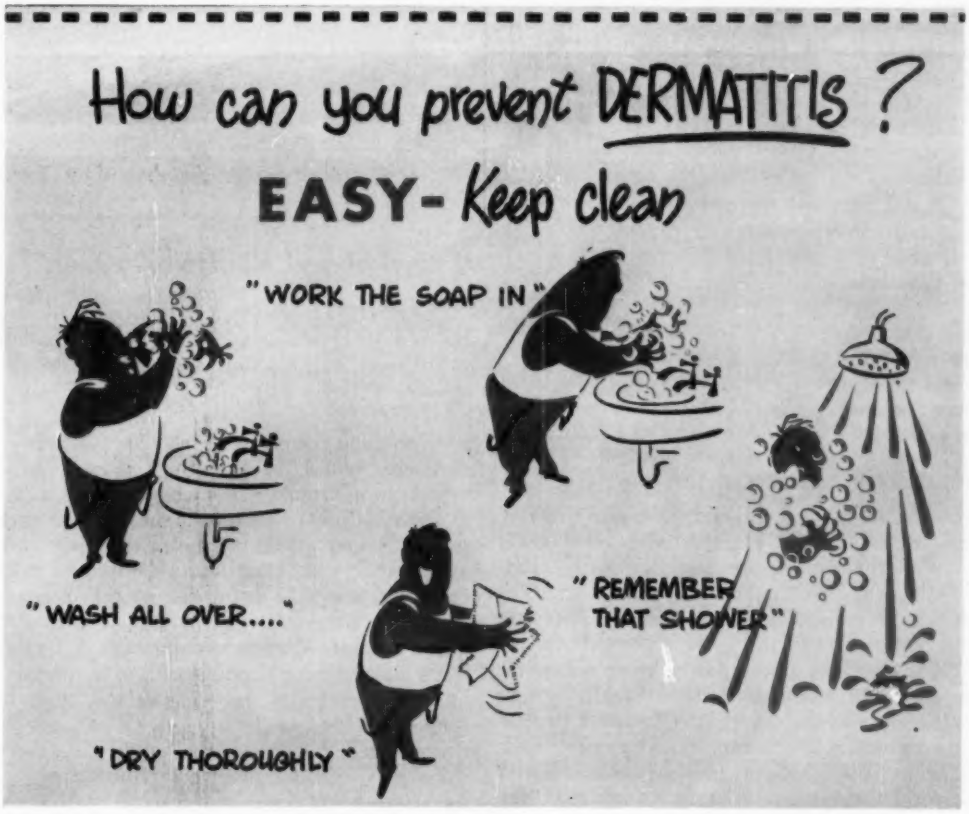


OCCUPATIONAL DERMATITIS: ITS CAUSE AND CURE

To a great extent, the quality and quantity of production, as well as the reputation of a plant, are literally in the hands of its workmen. Hands have a definite cash value, which industry must pay when disability occurs on the job. Frequently, disability takes the form of dermatitis, and when a pair of skilled hands can no longer perform their tasks efficiently because of this disease, the result for the individual is suffering and loss of working time, and for industry payment of the cash value of the hands through lost man-hours, lower production, and compensation to the employee.

What Is Dermatitis?

Dermatitis is a reaction of the skin to irritant substances or agents resulting in inflammation of the skin. Occupational dermatitis is, of course, dermatitis caused by a material, or materials, used in an occupation.

Of prime importance is the fact that the hands are exposed more than any other region of the skin to all types of environmental trauma, such as chemical agents, cleansers and the like.

Dermatitis of the hands may result from industrial

SKIN PROTECTION SERIES
other articles March & April

SUGGESTED SAFEGUARDS FOR EMPLOYEES

1. Keep the skin as clean as possible. The best cleanser is a mild soap and plenty of hot water. Hands should be washed thoroughly at noon and at the end of the work day. Leave work with a clean skin and avoid round-the-clock exposure to skin irritants. Solvents such as gasoline and turpentine, strong alkalis, and abrasives, should never be used for cleaning the hands. Remember that cleanliness is the best safeguard against skin diseases.
2. Avoid unnecesary contact with irritating substances and solvents which remove the natural oil of the skin.
3. Report any sign of skin disorder promptly to your immediate supervisor and to the plant first-aid or medical department. Avoid self-treatment. Only a physician can diagnose skin diseases properly and provide adequate treatment. Prompt treatment can prevent weeks of discomfort or disability.
4. Obtain immediate first-aid treatment for any cut or break in the hands, no matter how slight.
5. Wear gloves when possible and clean them daily. Remove contaminated gloves immediately. When protective ointments are supplied, apply them as instructed.

exposure in almost any field of work. According to the Occupational Health Division, Canadian Department of National Health and Welfare, dermatitis is most prevalent in the following industries and trades:

Metal industries
Electro plating
Food industries
Domestic and personal services
Building and construction
Cement, glass and pottery
Rubber industry
Chemical industries
Clothing and textiles
Leather and fur
Paper and printing
Furniture industry
Farming

Protective Quality of the Skin

Although the hands are exposed to a great variety of irritating substances and dermatitis-causing agents in many widely different occupations, nature has provided some degree of protection in the skin itself.

The cells and secretions of the skin protect the hands, and other parts of the body, from external irritants. Thus, the cells of the horny layer will withstand the action of moderately strong acids, though they are attacked by alkalis and fat solvents. Perspiration affords protection by diluting those irritants which are soluble in water, while the sebaceous (fatty) secretions form a protective coating. In addition, the pigment of the skin acts as a protective agent against light.

A thick, oily skin is more resistant than a dry skin to the action of fat solvents, such as soaps, turpentine, benzol, trichloroethylene and carbon tetrachloride. Individuals whose hands are covered with hair and whose skin is "greasy" are more likely to develop acne-like lesions upon contact with clothing soiled with oils, greases or waxes.

Warning Signs for Dermatitis

The first signs are usually itching and burning of the affected parts, with a slight reddening of the skin. If the irritation continues, blisters and swellings may form.

Whenever any sign of skin disorder appears on the hands, employees should report at once to the first-aid room or physician. Self-treatment may make the condition worse. Treatment should be undertaken by the plant medical department or an outside physician.

Early removal from exposure and placement at alternative work is essential, if disability is to be avoided.

Early discovery and **early** treatment make for a shorter and more curable disability. A neglected skin disease of the hands may result in absence from work and unnecessary discomfort.

Preventive Measures

The control of occupational dermatitis of the hands depends upon the active interest of both the employer and employee. Co-operative maintenance of personal

(Continued on page 46)

Causes of

The agents that have been found to produce

I. Physical and Mechanical Agents

The skin is exposed to and influenced by mechanical and physical forces in almost every occupation.

Pressure and Friction are mainly responsible for calluses. They result chiefly from recurring irritation by repeated pressure or blows, but chemicals and heat may produce the same effect. Not only the skin, but cartilage, bones, muscles and joints may undergo modification from these causes. The tissues adjacent to the callus may become inflamed and give rise to severe dermatitis. The jeweller, engraver, ring-cutter, stone-cutter, etc., have a large and heavy callus in the centre of the right palm due to the constant use of pliers.

Dust Irritants—Irritation from flying particles and dusts may produce various forms of dermatitis. Among millers, particles of stone, steel, and other hard substances handled in dressing the stones, penetrate the dorsal (back) surfaces of the hands and arms and produce spots of dark grayish discoloration.

Abrasion—Sores may develop on wrists chafed by sleeves contaminated by a dermatitis-producing agent.

Heat—Long-continued or frequent exposures to moderate heat may cause a variety of changes in the skin of such workers as cooks, bakers, glassblowers, and foundrymen. For example, knuckle and forearm burns are a peculiarity of workers in front of ovens.

Cold, especially when accompanied by dampness, produces frostbite. Outdoor workers such as telephone linesmen and farmers, as well as soldiers and sailors, may develop skin injuries. Fingers, ears and the tip of the nose are the parts mostly affected.

Electricity causes occupational burns on the hands from short circuits, live wires, and bare wires among linesmen.

Radium—Exposure to radium can cause dermatitis on the hands and arms. The workers exposed are X-ray machine makers, physicians, dentists, technicians, radium and uranium mine workers, etc.

A case in point is that of a dentist who for many years had the habit of holding dental films in the mouth of the patient during radiology. Eventually, a scaly eruption appeared over the fingers, followed by a scaly dry dermatitis over the skin of the hands.

II. Chemical Agents

Chemical agents are the predominating causes of dermatoses in manufacturing industries. These can be divided into two groups: inorganic and organic. Each of these groups can be divided into two groups (1) primary skin irritants and (2) sensitizers.

Primary Irritants—are strong chemicals, such as concentrated acids or alkalis, which injure the skin on

Occupational Dermatitis

occupational dermatitis of the hands may be divided into the following groups:

contact. The general or "primary" type irritants are defined as those which are likely to cause dermatitis among all persons exposed.

The inorganic primary irritants—among which the principal ones are acids (hydrochloric, sulphuric, nitric, perchloric, chromic); alkalis—alkaline sulphides, sodium, potassium, and ammonium hydrates; irritant elements and salts—antimony and salts, arsenic and salts. These salts may be sensitizers as well as primary irritants.

Acids and Alkalis—In strong concentrations, these substances produce an effect similar to a burn. Prolonged applications of dilute solutions may also damage the skin. Weak alkaline solutions dissolve the skin's natural fats, rendering it soft and sodden.

Chromic acids and the chromates, for example, are powerful skin irritants and corrosives. They are extensively used in many manufacturing processes. In a factory where chromates are manufactured directly from chrome ore, it was found that nearly all the workers had numerous scars of chrome ulcers on the hands and arms.

Cement is essentially a mixture of lime and clay to form alkaline calcium silicate after burning. It reacts on the skin just the way that would be expected of any strong alkaline solution. Hands are most often affected by cement dermatitis because they most often get in the mixture.

Salts—Workers in the photographic and lithographic trades are subject to dermatitis of the hands because of their exposure to solutions which contain salts of silver nitrate or chromium.

The organic primary irritants—include organic acids and anhydrides. Examples of these acids are—formic, oxalic, and salicylic; organic alkalis, organic solvents, essential oils, petroleum oils, pitch, tar, paraffin (impure).

Among the many examples that might be given of dermatitis of the hands caused by organic primary irritants, dermatitis caused by solvents will serve as an illustration.

Organic solvents are used for degreasing machine parts and tools; to dissolve and thin lacquers, varnishes and paints; to extract fats, waxes, etc., as solvents for rubber, resins, sulphur and phosphorus; and for dry cleaning.

Solvents such as petroleum, coal tar, turpentine, remove the fat from the skin, causing it to crack and fissure. Using solvents as hand cleansers is, therefore, a harmful practice.

Among the petroleum solvents dermatitis has been frequently reported from benzine among plate printers who clean inks from the press with cloths soaked in benzine; dry cleaners who handle cloths damp with benzine to remove stains from fabrics.

Sensitizers or Allergenic Chemicals—Almost any chemical can be a sensitizer. These substances do not affect everyone but cause skin lesions in certain hypersensitive people. Some of the most common of these substances in industry are: oils and greases, dyes, explosives, natural and synthetic resins and waxes, insecticides, photo-developers, coal tar and its derivatives. Skin trouble from these chemicals usually demands permanent removal of the affected worker from exposure, though hardening does occur in some instances. As a rule, only a small number of exposed workers are affected.

Machinists, to take but one example, may suffer from dermatitis of the hands due to contact with grease and oil.

III. Botanical Hazards

Certain plants and trees cause contact dermatitis in susceptible persons. Among such plants are poison ivy, poison oak, varieties of primula and chrysanthemums. Woods which cause skin trouble may be toxic, irritant or dermatitis-producing; for example, the African box-wood and teak wood.

Although poison ivy dermatitis is commonly thought of as one of the vacation and holiday dermatoses, it may also be regarded as an occupational disease affecting outdoor workers. The poison ivy plant and its allies are major occupational hazards to tree service workers, telephone and electric power linesmen, pipeline layers, farmers, woodsmen and numbers of men in the armed services.

IV. Biological Agents

Biological agents often cause or complicate occupational dermatoses. They may be divided into bacterial infections, e.g., boils, anthrax, glanders, infected occupational wounds; fungi, e.g., yeasts; parasites causing ground itch, mange, grain itch.

Bacterial infections frequently follow industrial injuries to the skin, and may also complicate an occupational dermatitis. In some instances bacterial infection is incurred directly from the materials used in the occupation, as in the case of anthrax from infected hides or from living animals.

Occupational Dermatitis—
(from page 44)

and plant hygiene will go far to eliminate industrial skin diseases. The Canadian Health and Welfare organization points out that the following measures are important in this connection:

1. Automatic or mechanical devices which replace direct handling of chemicals will reduce the employee's exposure to irritating substances. Providing simple tools and brushes with appropriate handles may suffice in some operations.

2. Personal cleanliness is most important, and is encouraged by adequate washing facilities, including soap of a mild type. Abrasive soaps and cheap bulk soaps should not be used.

3. All workers exposed to skin hazards should be watched carefully by the foreman and plant nurse. At the first sign of skin disorder, they should be removed from exposure and placed in alternative work.

4. Gloves should be worn when possible. When gloves cannot be worn because of unusual problems, protective ointments or "barrier creams" may be applied directly to the hands. Ointments should be chosen with care to give protection against specific skin hazards.

5. Employees should use safe methods in handling hazardous substances. Many exposures are caused by carelessness or lack of knowledge and can be avoided by proper instruction and supervision.

6. Harmless materials can be substituted for substances causing skin irritation. This is an effective method for preventing skin diseases and is practiced widely.

Protective Ointments or Barrier Creams

One means of protecting the hands against a wide range of substances, processes and combination of processes, is the use of barrier or protective creams. Such creams may be divided into three main classes:

Vanishing Cream: This type of cream fills the pores with soap, thus preventing the entrance of irritants and facilitating the removal of soil upon washing after work because the soap remaining in the pores when washed away with soap and water tends to remove the soil deposited in the pores or on the skin from within outward.

Water-Repellent Creams: The water-repellent type of ointment leaves a thin film of a water-repellent substance on the skin. This film prevents water-soluble irritants such as acids and alkalis from contacting the skin.

Oil and Solvent Repellent Creams: These creams repel irritants, solvents and oils.

In addition to the types of protective ointments described, special protective ointments have been devised against the action of certain photo-sensitizing chemicals. There are also antiflash creams to prevent burns from explosives flashes and there are insect-repellent creams.

Before applying a protective ointment, the hands should be entirely cleaned, otherwise injurious chemicals may be sealed onto the skin. Protective ointments should be applied several times a day, the old ointment being first washed off.

Conclusion:

The worker's hands are the most vital tools of industry's production pattern. It therefore is a matter of common sense, plus money saving when management and employees take every possible precaution to keep hands free from irritation, cuts and disease.

Material by courtesy of Occupational Health Div., Canadian Dept. of National Health and Welfare.

Picture by courtesy of American Association of Soap and Glycerine Producers, Inc.

The Drinking Problem in Industry

A book springing from the Du Pont Company's success in rehabilitating alcoholics among its employees has been written by Dr. C. A. D'Alonzo, assistant director of the Medical Division, as a guide to control of alcoholism by individuals and organizations. Titled "The Drinking Problem and Its Control," the book has just been published by the Gulf Publishing Company of Houston, Texas.

Du Pont inaugurated an experimental plan of rehabilitating alcoholics 15 years ago as part of its preventive medical program for employees. It succeeded beyond expectation, saving the health, sanity, or even the lives of more than 900 men and women in that time. Its effectiveness has inspired other organizations in the United States and Canada to similar efforts.

Dr. D'Alonzo's book reflects the company's experience in the form of a guide for individuals and organizations confronted with alcoholism. A short (130 pages), easy-reading volume, its purpose is to help people combat alcoholism—either their own or others'—by tracing the disease from beginning to "rock bottom" and spelling out the successful methods of arresting it.

It is significant that both the book and the program which generated it apply to living and working conditions which are normal. Du Pont's problem of alcoholism among employees is typical of the nation as a whole rather than exceptional. Its 85,000 employees form a cross section of the public and the proportion of them who are alcoholics is average.

A deliberate effort was made to seek out the alcoholics so they could be rehabilitated. Over the years 1,254 cases were "discovered." More than half of them —690—have been rehabilitated and almost 20 percent more—240—were improved. For the rest the situation is unchanged or unknown.

Dr. D'Alonzo points out that unless an alcoholic is rehabilitated by some means, he invariably loses his health or his sanity, if not his life.

From the beginning in 1944, the work has involved two parallel activities: general work through management and employees to spread the idea and break down stigmas attached to alcoholism, and direct work with alcoholics through Alcoholics Anonymous to rehabilitate them.

It is the sort of thing that can be done successfully by any willing group or individual, according to Dr.

D'Alonzo. He points out in the book that the effort to recognize the disease is a key factor in any attempt to do anything about it, whether by an individual or an organization. Despite its success, the company still campaigns for the early recognition of symptoms of alcoholism, as the earlier it is recognized in a man or woman, the easier it can be treated. This and treatment of it as a disease are vital, according to the book.

Must Want Help

Dr. D'Alonzo writes that the alcoholic must want help before the help will do any good; he cannot be forced into it. All too often that does not occur until he hits rock bottom. How he gets there, the stages he goes through, what to look for, and how he can be helped when ready, are all detailed in the book.

It describes the alcoholic and the phases of the disease because recognition is vital. It relates how the disease affects the individual, medically and otherwise, and how those around him are affected. Most importantly, it covers medical and non-medical treatments and shows how they can be made to succeed, and it details the role of industry and family in meeting the problem.

Dyett Heads Noise Abatement Council

E. G. Dyett, Jr., of West Newton, Mass., has been elected 1960 president of the National Noise Abatement Council at the annual meeting of that organization. Mr. Dyett, who is in charge of the Instrument Division of H. H. Scott, Inc., succeeds A. J. Weitzel, of New York. Mr. Dyett has served as vice president during the past year.

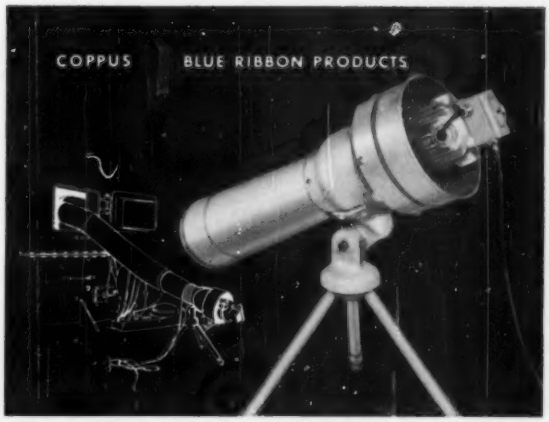
R. D. Lemmerman, of the Koppers Company, Baltimore, was elected vice president. Named directors were Philip Pepe, Remington Rand, Inc., New York, Martin Hirschorn, Industrial Acoustics, Inc., New York, and E. S. Graybill, Armstrong Cork Co., Lancaster, Pa.

Re-elected were Wallace W. Waterfall, treasurer, and L. J. Buttolph, executive secretary. Mr. Waterfall also is secretary of the Acoustical Society of America.

Th Board of Directors will be made up of the new directors, plus President Dyett and Vice President Lemmerman.

Organized in 1941

The council was organized in 1941 for the purpose of alerting the public to the menace of unnecessary noise in industry, commerce, street and home. It sponsors the observance of the annual Noise Abatement Week and awards plaques and certificates to municipalities which observe the week and conduct outstanding year-round anti-noise campaigns. It also gives awards to industries which contribute to the reduction of noise through product improvement and educational programs. The Council sponsors and distributes the Noise Abatement Digest, a publication that reports on latest developments in the noise abatement field.



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Nearest thing to a gas mask. Double filters guard against nuisance gases, vapors, chemical fumes, dust. Available in Code "A" for inorganic gases; Code "B" for organic vapors; Code "AB" for inorganic and organic use. Supplied with Code "B" cartridges unless otherwise specified. See your safety equipment supplier or order sample direct —$5.00 postpaid.

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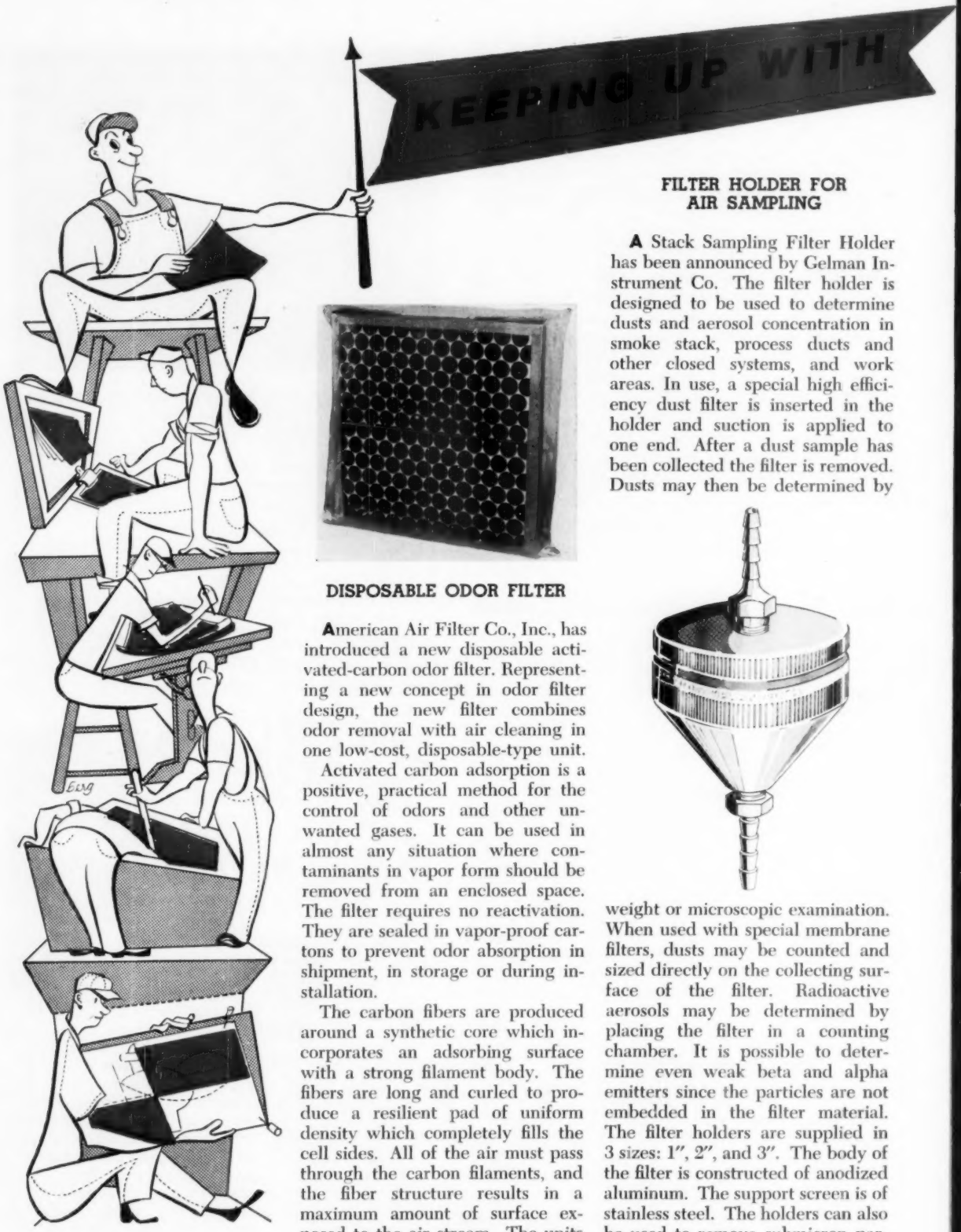


DISPOSABLE ODOR FILTER

American Air Filter Co., Inc., has introduced a new disposable activated-carbon odor filter. Representing a new concept in odor filter design, the new filter combines odor removal with air cleaning in one low-cost, disposable-type unit.

Activated carbon adsorption is a positive, practical method for the control of odors and other unwanted gases. It can be used in almost any situation where contaminants in vapor form should be removed from an enclosed space. The filter requires no reactivation. They are sealed in vapor-proof cartons to prevent odor absorption in shipment, in storage or during installation.

The carbon fibers are produced around a synthetic core which incorporates an adsorbing surface with a strong filament body. The fibers are long and curled to produce a resilient pad of uniform density which completely fills the cell sides. All of the air must pass through the carbon filaments, and the fiber structure results in a maximum amount of surface exposed to the air stream. The units are offered in four standard sizes to fit in standard 2 inch frames.

For details, use **Key # DF-1** on inquiry card on page 1.

FILTER HOLDER FOR AIR SAMPLING

A Stack Sampling Filter Holder has been announced by Gelman Instrument Co. The filter holder is designed to be used to determine dusts and aerosol concentration in smoke stack, process ducts and other closed systems, and work areas. In use, a special high efficiency dust filter is inserted in the holder and suction is applied to one end. After a dust sample has been collected the filter is removed. Dusts may then be determined by

weight or microscopic examination. When used with special membrane filters, dusts may be counted and sized directly on the collecting surface of the filter. Radioactive aerosols may be determined by placing the filter in a counting chamber. It is possible to determine even weak beta and alpha emitters since the particles are not embedded in the filter material. The filter holders are supplied in 3 sizes: 1″, 2″, and 3″. The body of the filter is constructed of anodized aluminum. The support screen is of stainless steel. The holders can also be used to remove submicron particles (as small as 0.05) from hydraulic fluids.

For details, use **Key # DF-2** on inquiry card on page 1.

DUST & FUME CONTROL DEVELOPMENTS

CHROMIC ACID MIST DETECTOR

A new M-S-A Chromic Acid Mist Detector is announced by Mine Safety Appliances Co. It operates on the same colorimetric test principle as the former M-S-A Samplair but employs freshly sensitized filter papers instead of factory-impregnated filters. Sensitizing reagents are supplied in a sealed plastic tube and enclosed glass ampoule, and do not deteriorate during long storage. A mixture for sensitizing a number of filter papers can be prepared quickly and simply without opening the flexible tube. Mixed reagent is good for one day.

Four strokes of a hand pump, after the filter is sensitized with one or two drops of mixed reagent, produce a color change if chromic acid mist is present. Comparisons with a reference color standards card indicate the amount present. The detector is supplied in a carrying case and includes four reagent syrettes and 24 filter papers. Additional syrettes and filter papers are available separately in any quantity.

For details, use **Key # DF-3** on inquiry card on page 1.

DUSTLESS DRILL

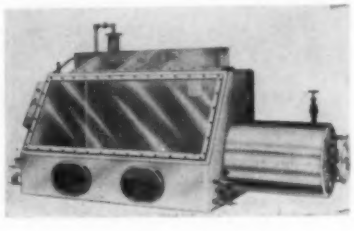
Dusty drilling conditions during plant construction or remodeling are now eliminated with a new dry, dustless drill. The drill, the LHV45, is made by the Le Roi Division, Westinghouse Air Brake Co. Available to contractors, mine and quarry operators, and plant maintenance crews, the equipment is approved by the Bureau of Mines. Cuttings are drawn into 5-hole CRD or Vac-Nu-Matic bits, through hollow drill steel, into the drill chuck, and immediately out the side of the chuck housing. The cuttings do not travel through the drill, nor come into contact with working parts of the drill. Designed to operate with the new LX-1 automatic dump dust collector tank, the drill is of the medium weight class (56 lbs.). The drill and dust collector tank operate at 80 to 90 psi. Air supply connection is ¾ in. pipe, for use with ¾ in. air supply hose. The dust collector hose is 1 in.

For details, use **Key # DF-4** on inquiry card on page 1.

SUPER-DRY GLOVE BOX

A super-dry environment for handling organic or radioactive chemicals and modern metals that cannot tolerate humidity is provided by a stainless steel glove box, Model A-13, recently developed by S. Blickman, Inc. The combination of a Freon-tight main chamber and an oil-free gas-drying system allows the dew point to be brought down to —75°F in 30 minutes. The air is dried by passing through molecular sieves (⅛ in. pellets) in a drying tower and recirculating continuously at approximately 10 cfm into the main chamber.

The glove box includes a vacuum-tight autoclave-type airlock, which contains two valves for admitting and evacuating inert gas and a 1-in. vacuum pump-out connection for evacuating air. With a mechanical pump, the airlock can be pumped down to approximately 50 microns.



The glove box, 28 x 26 x 48, is fabricated entirely of stainless steel. Rounded corners and fine finish allow easy cleaning or decontamination. Safety glass, ¼ in. thick, runs all the way across the sloping front of the enclosure. Three services with gas-tight control valves are located both on the inside and outside on each end of the unit. Also available in 5, 6, and 8 ft. lengths. The gas drying system is available top-mounted, side-mounted, or bottom-mounted.

For details, use **Key # DF-5** on inquiry card on page 1.

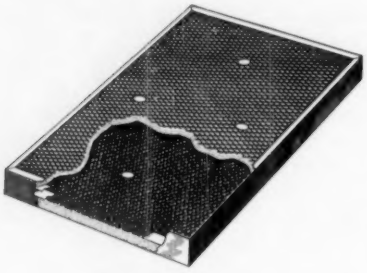
NEW CYCLONE SEPARATOR

A new Model 30 cyclone dust separator, featuring an adjustable belt drive that provides a wide range of CFM performance against varying resistances, has been introduced by Torit Mfg. Co. The high-efficiency unit includes a new radial blower which is self-cleaning and is located on the "clean air" side to prevent fan breakage. In laboratory tests, the Model 30-FM separated 99.2% of steel grindings, 99% of sawdust and 94% of baking flour by weight. Models for outdoor exhaust or for recirculating cleaned air indoors are available.

The Model 30 is 12 feet, 10 inches high and occupies 30 x 36 inches of

floor space. Inlet diameters are 12 inches, outlets 14 inches. The standard base contains 12½ cubic feet capacity and bases available to order. Optional equipment includes a protective weathercap and weather-resistant finish for outside installations.

For details, use **Key # DF-6** on inquiry card on page 1.



GREASE FILTER

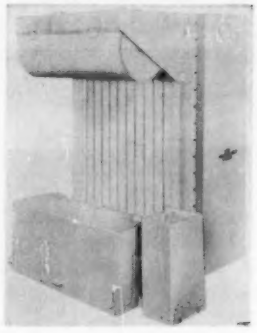
A new three-stage double-flame-baffle grease filter that reduces fire and health hazards to an absolute minimum has been developed by the Extraer Inc. It provides higher percentage of grease removed; no back drip; ease of cleaning; elimination of flame flash through filter into duct work; and no accumulation of grease in duct work or blower motors.

The Elektra grease filter consists of two filter units in a single steel frame, separated by a ⅝" air space which acts as a cooling and solidifying chamber. The entire unit is made of heavy-duty metal and is designed to last indefinitely under normal use. It will fit standard and non-standard grease canopy hoods now used in cafeterias, restaurants and other food processing institutions.

For details, use **Key # DF-7** on inquiry card on page 1.

AUTOMATIC ELECTRONIC FILTER

American Air Filter Co. has announced the Type B Rollotron, which is a new design of the basic Rollotron agglomerator-filter principle. The new unit combines the high efficiency of an electronic precipitator with the low maintenance of an automatic, renewable media filter. Dry, electrostatically charged plates are used to agglomerate atmospheric contaminates—such as



dirt, bacteria, pollen, smoke, etc. The agglomerated particles (including submicron sizes) are held together by intermolecular attraction until they are picked up by the air stream and deposited in the renewable media of the storage section. There the accumulated dirt is automatically wound into a compact roll for easy disposal.

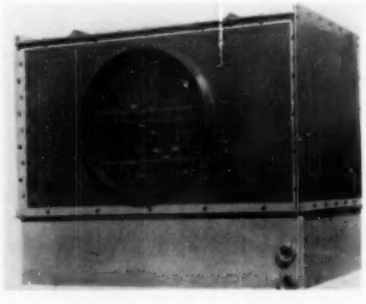
The new unit is unusually compact, is easy to install and easy to maintain. Since it is not necessary to wash the plates water connections are not required.

For details, use **Key # DF-8** on inquiry card on page 1.

CORROSION-PROOF AIR WASHERS

A new line of Air Washers, entirely fabricated of rigid polyvinyl chloride is now available in a range of capacities from 1,000 to 54,000 cubic fpm from Industrial Plastic Fabricators, Inc. Designed to handle acids, alkalies and corrosive fumes, these Air Washers will clean 96% to 99% of contaminants that are instantaneously soluble in water, such as chromic acid, sulphuric acid, caustics, etc.

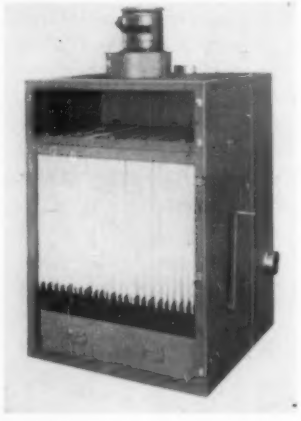
I.P.F. fabricates the entire unit of rigid unplasticized PVC, a material that is extremely smooth surfaced and non-porous for less resistance to air flow, no water absorption and



less material build-up on the packing rings or structural surfaces. The ring bed made of PVC will not absorb contaminated material to lower operating efficiency or contaminate reclaimed solutions. The Air Washer employs a three-way action: in first section air is thoroughly sprayed through specially designed PVC nozzles; air then enters the Raschig rings washer bed where rings, thoroughly wetted, change air direction at least eight times; in the eliminator section particles of heavily entrained water are removed, leaving 97% saturated clean air to enter the exhaust fan. For difficult removal problems, such as nitric acid, a second spray and washing section can be used.

The units are very light in weight and have easily removable side and top plates for accessibility. The company also manufactures a complete line of PVC equipment including blowers, fans, ducts, hoods and stacks for complete fume elimination installations.

For details, use **Key # DF-9** on inquiry card on page 1.



CABINET DUST COLLECTOR

A new cabinet cloth-filter-type dust collector, operating in the 650-1535 CFM range, has nearly 100 percent dust filtering efficiency, the Torit Mfg. Co. reports. Handling particles even smaller than 1 micron, this high filtering efficiency permits the filtered air to be recirculated indoors thus saving heated or conditioned air.

Dust-laden air is brought into the cabinet and the dust is trapped on the outer, under sides of the fire-

resistant filter bags, eliminating fan loading or damage since the blower is located on the clean air side of the collector. Most dust settles immediately into the drawer (or hopper-base) and any clinging dust is easily dislodged by the filter shaker operated from outside the cabinet.

The standard Model 90 contains a pull-out drawer with 5.5 cubic feet capacity. Equipped with hopper base, dust capacity is 9 cubic feet. The collector stands 76 inches high and occupies 40 x 36 inches of floor space. Total cloth filtering area is 250 square feet. Available caster-mounted, with exhaust silencers for unusually quiet operation and with extra-large dust hoppers as optional equipment.

For details, use **Key # DF-10** on inquiry card on page 1.

DUST COLLECTORS

Aget Mfg. Co. has announced a new Dustkop Filterkop, developed for industrial operations where the volume of air to be handled is unusually high. Used in conjunction with standard vented Dustkops, the Filterkop receives all the air collected by these units, recovers nearly 100% of the dust load, dissipates harmful fumes, and recirculates air that has been thoroughly cleaned.

The basic unit of the Filterkop consists of heavy gauge steel housing, a hopper, 80 cloth filter tubes, and a shaker mechanism. Accumulated dust is automatically shaken from the tubes into the hopper at the end of each fan operation. Depending on plant requirements, the Filterkop may consist of a single unit or any multiple thereof, and only one air inlet and one air outlet are needed. Easy access for tube installation and inspection are provided by a large door.

For details, use **Key # DF-11** on inquiry card on page 1.

NEW

filter respirator actually comfortable to wear

More efficient – costs less, too!

We don't say your workers won't know they're wearing our new Resp-R-Aid mask. But it's a fact the edges of this remarkable *urethane foam* mask are so soft and pliable they literally *caress* the natural contours of *any* face, closing all gaps with no discomfort. Yet the mask weighs hardly more than an ounce.

The entire mask is a filter. More than 25 square inches of micro-porous urethane. Up to 8 times the filtering area of most masks. Breathing is easy, natural, *comfortable* because thousands of interconnected cells trap foreign particles, but let air pass freely. Resp-R-Aid lasts longer, too; you wash it out in seconds.

Yet for all its comfort and efficient protection against mists, sprays and nuisance dusts, Resp-R-Aid costs only $1.95. Replacement filters available. Watchemoket Optical Company, Inc., 232 West Exchange St., Providence 3, Rhode Island. Throughout Canada: Levitt-Safety Limited.

WATCHEMOKET

Resp-R-Aid®

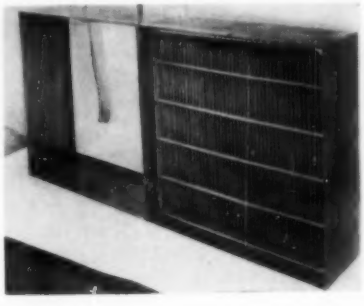
And Watchemoket Eye-Savers, Safety Spectacles, Cover Goggles, Eye Shields, Welding Goggles.

(For details, use Key # O-13 on card on page 1)

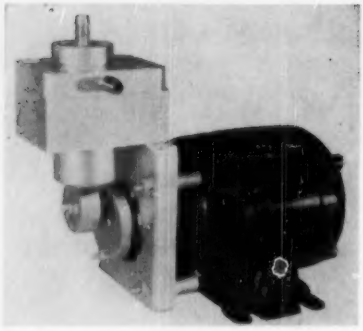
AIR FILTER

Designed for economical and highly efficient air filtration in many industrial and commercial fields, the Dustfoe Space Filter has been introduced by Mine Safety Appliances Co. for use in chemical plants, steel mills, pharmaceutical processing plants, photographic film manufacturing plants, commercial buildings, paper mills, commercial refrigeration, oil refining and other fields. In Bureau of Standards tests, the filter is rated 85 to 95 percent effective.

The filter element—framed with waterproofed, non-combustible fiber board—is a honeycomb, folded blanket of non-combustible fibers held by fire retarded woven webbing that covers an effective area of 80 square feet. The filter can be replaced quickly and economically. No oiling is required. The filter web, in a continual state of dryness, effectively holds dirt. Although custom built units may be obtained, standard units fit into a permanent metal frame, 24 x 24 x 8 inches. The new filter operates successfully in air streams with up to 100 percent relative humidity. Water in vapor form has no effect on the unit. However, condensed water increases resistance similar to deposited dust until it evaporates. Non-combustible and fire retardant materials are used so units can operate in air temperatures as high as 500 degrees F. Dustfoe units are designed for installation in straight wall banks, but V, U and W configurations may be used.



For details, use **Key # DF-12** on inquiry card on page 1.



AIR SAMPLING PUMP

A new miniature pressure-vacuum pump has been developed as a compact lightweight vacuum pump for air sampling but has many other uses. The pump has a capacity of 0.3 CFM free air and weighs 5 lbs. complete with motor. The vacuum mechanism is a small aluminum piston. Twin graphite rings on the piston maintain a vacuum seal and require no lubrication. The pump is designed for continuous duty operation under the most rigorous conditions. Operation of the pump is quiet. The pump will produce 17 inches of vacuum or 20 lbs. of pressure. The pump, which has many uses in the field and laboratory, is available from Gelman Instrument Co.

For details, use **Key # DF-13** on inquiry card on page 1.

GERMICIDAL TEST KIT

The Scientific Chemicals Division of Talb Industries has developed an on-the-spot "Field Test Kit" for testing their germicidal dust control system. Included in the compact kit is a plate and cover, divided into sections, and two glass ampules, each with sterile water and a cotton swab sealed inside.

By using swab #1 and plate-side #1 for testing area before it is wiped with a Sani-Dust Control-treated cloth—and then, doing the same with Swab #2 and plate-side #2 with an area after the wiping—two "cultures" are obtained. Plate is then stored at room temperatures for two days, or at about 100° F for one day, and growth of bacteria on both halves of plate are compared. Sani-Dust Control System is available through Industrial Laundries and Linen Supply Houses that rent cloths and mops. These cloths and mops are fully impregnated with germicidal dust control chemicals before being re-issued to the actual laundry or supply houses. Dust cloths, mops, etc., thus impregnated, not only are germicidally treated, but also prevent the spread of dust, and greatly extend the "life" of waxing, when it is employed on the floors thus maintained. The Sani-Dust System is registered with the U. S. Department of Agriculture, and is accepted for hospital use.

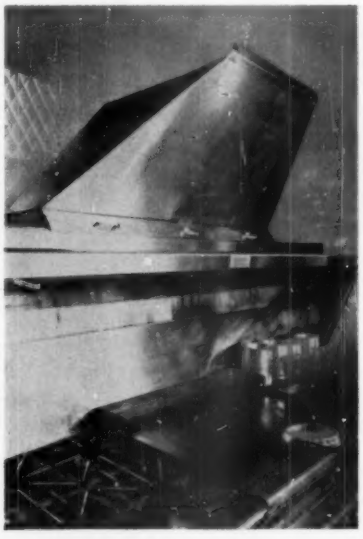
For details, use **Key # DF-14** on inquiry card on page 1.

NEW COOLING TOWERS

A new line of packaged induced-draft water cooling towers for use with commercial and industrial air-conditioning systems, as well as in plants where process water is required, has been introduced by Mason Products, Inc. The Series 3200 Hydra-Glide cooling towers were especially developed to provide more cooling capacity in less space. Model 3208, which has a 7.5-ton capacity at 78 degrees F. wet bulb temperature, is just 30-inches wide, 45-inches long and 54-inches high. Available in all-steel construction with a plastic base coating or stainless steel. All have heart-grade Redwood filling, stainless steel fan shaft and venturi-type fan throat.

The towers, with capacities from 5 to 60 tons, are assembled with slip-fit type joints for easy disassembly. Use of the towers with water-cooled air-conditioning systems assures the saving of more than 95 percent of water volume in the system. Similar savings result when the towers are used in connection with equipment requiring process or cooling water.

For details, use **Key # DF-15** on inquiry card on page 1.



SELF-CLEANING VENTILATOR

The Bohnne Fireless Self-cleaning ventilator system is now being offered to restaurants and institutions by Bohnne Enterprises. There is no accumulation of grease in flues and outlets. Grease-laden air is drawn off from oven vents and open kettles at about 375 degrees. On traveling less than two feet, air enters a cool damp chamber where temperatures are reduced to 70–80 degrees. The lowered temperature causes grease to solidify on the walls of the chamber where it then is washed downward into a sump.

Water and fan are activated through a single switch. When the unit is shut down at the end of the

day, heat from ranges and ovens melts any grease clinging to the bottom side of the horizontal filters whereupon it, too, drops off into the sump area. Little cleaning is required since all surfaces coming in contact with grease are constantly bathed in moving water. The units may be installed in existing kitchens.

For details, use **Key # DF-16** on inquiry card on page 1.

RADIOACTIVITY AIR MONITOR

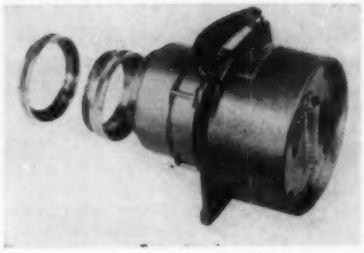
A new air monitor claimed to be extremely sensitive has just been introduced. It not only warns personnel of excessive airborne particulate radioactivity but provides a permanent legal record of the integrated radioactive dose.

Known as Model AM-2A, the new instrument is a product of Nuclear Measurements Corp. It detects alpha, beta and gamma activity; records the amount of activity on a continuous chart, and warns by light and bell when preset limits are exceeded. The unit will operate for about five days unattended. A filter change requires only two minutes. Secret of the sensitivity is a new-type mylar window flow G-M detector. Other features include all-transistorized amplifier, fixed filter, mobile cart, maximum counting rate of 50,000 cpm, and easy decontamination.

For details, use **Key # DF-17** on inquiry card on page 1.

HIGH VOLUME AIR SAMPLER

The Staplex Hi Volume Air Sampler is detailed as an effective instrument for detecting and measuring air pollutant particulate matter. Made by the Staplex Company,



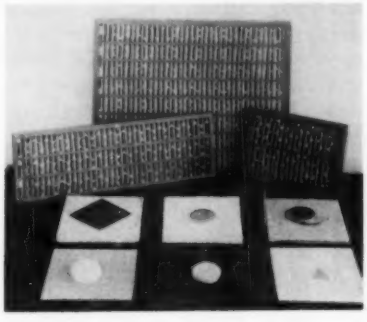
the device, which utilizes filter papers, is said to be useful for either indoor or outdoor sampling. Readily portable, it may be used for mobile or fixed position operation.

Employing a turbine type blower, the instrument literally inhales an entire area accurately sampling the atmosphere for particulate matter as small as one hundredth of a micron in diameter. The standard unit utilizes a filter paper approximately 4" in diameter. Larger sizes and adapters are also available. Applications include the detection of radioactive particles, smoke and smog, for atmospheric studies by weather services, for detection of mine hazards, factory health hazards. There are many applications in nuclear research, rocket and missile fuel development and numerous other areas.

For details, use **Key # DF-18** on inquiry card on page 1.

NEW FILTER MATERIAL

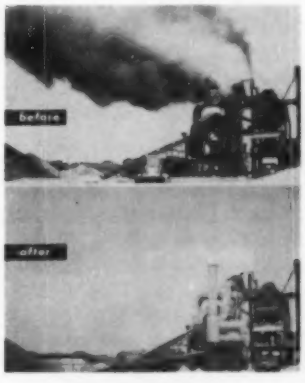
A new low-density nonwoven filter material developed by Hollingsworth & Vose Company represents a new approach and has been engineered to perform a broad range of filtration tasks with maximum efficiency over a longer period of time. The new filter material, *Hovolite*, uses a microfine rayon fiber developed by American Viscose Corporation in a matrix



of Vinyon. The new material offers exceptional versatility. Its controlled, graded pore size affords substantially more loading capacity and longer filter life. It is being used for varied industrial tasks filtering radioactive dust, keeping old-style dirt dust kicked up by heavy duty road building equipment out of lubricating systems and coal dust out of miners' lungs, removing all types of dusts, mists, fumes, smokes, and pollents from air and gases; removing solids from liquids; separating immiscible liquids; noise absorption; and in many types of respirators.

Because of its thermoplastic properties, *Hovolite* is heat-sealable to itself and can therefore be easily laminated and heat-formed or shaped. It is available in thicknesses from 0.1 to 1.0 inches in rolls, sheets, die-cut pieces or fabricated parts. All grades are engineered for specific applications. Shown in the photo are materials for air movement filters (top); respirator filters (round); squares which are cut to size and shape and wrapped around air filters to give better performance; a rectangular piece used as a sound absorber in vacuum cleaners; and (lower left) thin material used for removing water from organic substances.

For details, use **Key # DF-19** on inquiry card on page 1.



DUST WASHER

A solution to the air-pollution problem facing asphalt plants and other dusty operations is available in the unique "3-WAY" cleansing principles of the new Bollard Dust Washer developed by Bollard Asphalt Plant Division of The Colonial Iron Works Co. Analyses

of exhausts from installations at asphalt plants in full production report results well within strict air-pollution limits. Plants now in violation of local codes can supplement their primary dust collectors with the new Bollard Dust Washer for the desired result. It can be added to any asphalt plant or dry primary collector.

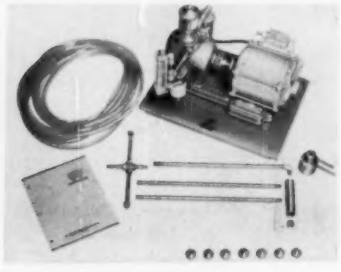
Plant exhaust of hot air, gases, and escaping fines is subjected to three actions: "Baffling" to delay and change direction, aiding in separation of particles; "Spiralizing," a forced swirling motion which "throws" particles to impinge on wet surfaces; "Scrubbing," a series of interlaced, adjustable water spray patterns to filter out particles from swirling gas. Impingement action is said to trap all sizes of dust particles—even material difficult to wet. Cleaned exhaust passes out stack. Continual downward flushing of internal surfaces by scrubbing water renders unit self-cleaning.

Three models available. Include water pumps with strainers for recirculation of water from reservoir. Centralized manifold system controls amount of water supplied to each compartment. Large access doors with rubber gaskets are conveniently located in each compartment for easy inspection of interior. Manufacturer provides specialized engineering services for each individual installation.

For details, use **Key # DF-20** on inquiry card on page 1.

AIR DUCT SAMPLER

A new Iso-Kinetic Dust Sampler designed to measure dust particles discharged from dust control equipment and to determine equipment operating efficiency has been announced by The Day Company. This equipment used by Day Co. in conducting field tests is now available to companies who wish to conduct their own dust control measurements.



The dust sampler will accurately measure grains of dust passing through dust control ducts, or will measure particles being discharged from dust control equipment; such as cyclones and other equipment which exhaust to the atmosphere. Complete assembly consists of a rotometer, air-line filter, air pump, oil reservoir, oil trap, electric motor, plastic air-line tubing, rod handle, graduated rod, filter thimbles, thimble holder, thimble ring seals and nozzles. Complete with instructions and charts.

For details, use **Key # DF-21** on inquiry card on page 1.

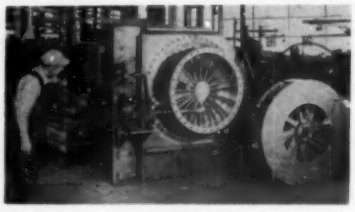
REPLACEABLE FILTERS

A new, versatile space filter with exceptionally high dust carrying capacity has been introduced by Mine Safety Appliances Co. The lightweight Ultra-Aire Space Filter —with replaceable filter elements— is fire resistant, unusually strong, and ideal for high humidity service in product and process control as well as personnel protection. It is

individually pre-tested and proves at least 99.97 percent efficient in removing particles of 0.3 micron diameter. It provides sterile and completely dust-free air in many applications, particularly pharmaceutical and photographic manufacturing and processing, optical and precision instrument manufacturing, food processing, research laboratories, in glove boxes, handling radioactive materials, processing of toxic metals, in hospitals, and for bomb shelter ventilation.

The replaceable filter is usually mounted in a permanently installed steel frame, and includes a continuous sheet of micro fibre web folded to expose 200 square feet of structurally sound filter area in the 1,000 cfm size. The side panel is waterproofed, non-combustible, honeycombed fibre board. Both filter faces are protected by a second honeycomb structure to protect filter from rough handling and to serve as a prefilter. Can be used for rectangular and cylindrical element construction. The integral frame is available in three models —standard plywood for service to 250 degrees F., fire retarded plywood for service to 350 degrees and protective finished steel to guard against chemical and moisture attack in service to 1,000 degrees. Each model provides for 35, 50, 500, 1,000 cfm capacity sizes.

For details, use **Key # DF-22** on inquiry card on page 1.



SOLVENT RECOVERY FAN

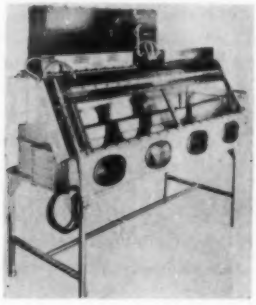
A new gas-tight and spark-resistant fan for solvent recovery application in the petro-chemical industry has been completed by American-Standard Industrial Division. The entire fan unit minimizes the possibility of an explosion when handling highly volatile solvent vapors.

Basically, the new unit is an American Blower type HE fan with radial blade wheel. The 50-in. diameter wheel is fabricated of aluminum and has a cast manganese-bronze spider. Variable inlet vane control is provided for automatic volume regulation; this accessory is also of gas-tight construction. The inlet vanes are automatically operated by means of an air motor. An emergency manual control is also provided (see photo).

For details, use **Key # DF-23** on inquiry card on page 1.

MICRO-BIOLOGICAL SAFETY CABINET

A stainless steel micro-biological safety cabinet designed to protect the laboratory technician from hazards such as infectious micro-organisms, toxic chemicals, contaminated or infectious animals, and radioactive materials used in medical and biological research has been announced by S. Blickman, Inc. A filter canister, mounted on the back or top, is provided with three 500-watt electrical strip heaters thermostatically controlled to



operate to 400°F. to destroy any live micro-organisms or viruses. Ease of cleaning and decontamination is made possible by the use of seamless crevice-free round-corner construction. Available in either 36- or 48-inch lengths. Width is 26 in. and the height is 28 in. Two fluorescent lamps are enclosed in a special housing on top. A cold cathode sterile light with low ozone output is installed above the front window, which is hinged to allow easy entry for cleaning or installing large equipment. Locking cams provide firm sealing of the window against the neoprene gasket.

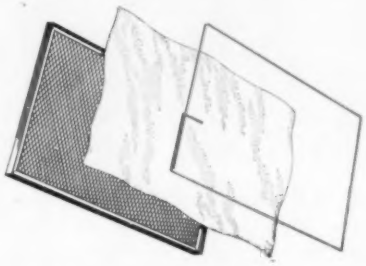
For details, use **Key # DF-24** on inquiry card on page 1.

SNAP-IN FILTER

A snap-in filter that will give maximum air filtration at low cost has been developed by Extraer Inc. The Elektra Snap-In Filter consists of a flexible steel frame with a metal grid and a snap ring to hold the disposable filter pads in place.

The filter pads are made of a fluff acetate material, which is inert, and has very high efficiency ratings. The material has a low static pressure drop, and can be used three or four times by dusting out or washing. After their usefulness as a filtering material is at an end, they may be used as dusting or wiping rags.

The snap-in filter frame and four pads (approximately one year's



supply) are sold as a unit. The frame becomes a permanent installation, and replacement pads can be purchased. The frames are made in sizes to fit all home, commercial and industrial heating and air-conditioning systems. Custom sizes are made on request.

For details, use **Key # DF-25** on inquiry card on page 1.

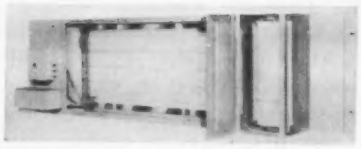
WELDING EXHAUST SYSTEM

A new low-cost, high-efficiency exhaust system for welding shops is announced by Car-Mon Products, Inc., specialists in carbon monoxide removal systems for garages and work shops.

Called the Car-Mon Dual TAB-L-EXHAUSTER, the system pulls out all welding fumes right from their source. Receptor exhaust inlets with magnet-bases hold fast, right on the piece being welded, or on any convenient metal nearby. Powerful suction from a fan system suited to the individual shop layout

draws off gases, fumes, smoke and heat. Flexible weld-proof tubing gives full easy maneuverability and wide range of usefulness from a fan exhausting one or several receptors.

For details, use **Key # DF-26** on inquiry card on page 1.



AUTOMATIC ROLL FILTER

American Air Filter Co. announces the new Type H Roll-O-Matic, automatic renewable-media air filter. Operation is completely automatic. The new unit requires an absolute minimum of maintenance, and filter resistance is constant. The renewable media consists of a specially woven curtain of glass fibers which traverses the face of the filter and rolls up collected air contaminants into a disposable roll at the side. The horizontal design is suitable for multi-zone air-conditioning units, heating and ventilating units, especially where limited headroom is a factor. A drive mechanism actuated by cascade timers automatically feeds media across the face of the filter at a pre-determined rate, depending on filter size and dust conditions.

It can be arranged two units high for applications where additional capacity is necessary. It is available in 10 sizes ranging in capacity from 4,070 to 39,000 CFM.

For details, use **Key # DF-27** on inquiry card on page 1.

PARABOLIC AIR FILTER

Meeting a demand for a filter with high air-cleaning efficiency, dust-holding capacity and low initial resistance, Arco Mfg. Corp. offers a parabolic shaped, disposable bag-type filter for air-conditioning, heating and ventilating systems. In the "Arco B/T Pure-Air Filter," filtering action is strongest where the dust particles are finest. Airflow is strongest where the accumulation of large dust particles is greatest. The least resistance to air flow is at the back of the bag, gradually increasing up the sides. "Arco B/T Filters" are made with upstanding fibers on the surface to promote the formation of a pervious filter cake. As the filter cake builds up, the air stream hits it at an angle,

breaks it off and carries it to the back of the bag.

The new filter is suitable wherever a high degree of air-cleanliness is needed, as in hospitals, laboratories, precision instrument factories, color painting, food and drug plants, etc. The mouth of the filter has a stiff fiber frame which facilitates insertion and removal. It fits most filter banks with a downstream clearance of 18". During replacement, all dirt remains inside the bag.

For details, use **Key # DF-28** on inquiry card on page 1.

HYDROGEN FLUORIDE DETECTOR

Presence of hazardous amounts of hydrogen fluoride in air (0.5 to 5 ppm or more) can be measured simply and quickly with a new detector offered by Mine Safety Appliances Co. Toxicity measurements are made by drawing air over a sensitized filter paper with an aspirator bulb. If a pink color appears, it is compared with a color chart and the HF concentration is read on a calibration chart. Applications include chemical plants and laboratories, oil refineries where HF is used as a catalyst, glass plants, and the field of rocket and missile propulsion where fluorine is used as a fuel oxidizer. The M-S-A Hydrogen-Fluoride Detector is supplied in a lightweight, portable case.

For details, use **Key # DF-29** on inquiry card on page 1.

AIR SAMPLING KIT

An air sampling kit, manufactured by the Gelman Instrument Co., combines a vacuum pump,

flowmeter and weather proof housing. The kit can be used to collect samples of dusts, radioactive aerosols and gases. For determining dusts in air, special filters and filter holders are available as accessories. The vacuum pump used is a carbon ringed piston unit which never requires lubrication. A choice of 2 or 4 CFM air capacity is available. The flow indicating device is a tapered orifice plastic meter. This instrument has uses in collecting dusts and gases for analysis in air pollution studies, health physics surveys, safety-health work and process efficiency tests.

For details, use **Key # DF-30** on inquiry card on page 1.

Protective Coatings

(from page 17)

Solvents used in protective coatings vary in their solvent strength, their evaporation time, their flammability, their toxicity and their odor. Esters and Ketones are common solvents for lacquers, and Alcohol the solvent for shellac. The four main types used in conventional maintenance coatings, however, are (1) Terpenes, (2) Petroleum Distillates, (3) Coal Tar Distillates and (4) Water.

The Terpenes are of several types—those commonly used in painting being Gum Turpentine, which is made from the sap of certain pine trees, and Spirits of Turpentine, a much more uniform distillate, which is produced from the wood waste of the same trees. Both are very pungent and relatively expensive for volume use, and therefore little used today.

Most commonly used of the Petroleum Distillates is Mineral Spirits, which originally was dubbed "Turpentine Substitute" or "Sub Tyrps." VM&P Naphtha—the VM&P standing for "Varnish Makers and Painters"—is a solvent with a considerably lower flash point than Mineral Spirits, and is used considerably in spray work to speed drying so that any overspray will fall to the floor in the form of dry particles which can be swept up like dust. White Gasoline of the leadfree and therefore relatively non-toxic type is used for on-the-job thinning of specialized coatings such as Traffic Paints which for obvious reasons are expected to dry almost "off the brush."

Newest and most unique of the Petroleum Distillates is of course the type known as Odorless Thinner. There are so-called odorless thinners which are actually nothing more than reodorized or deodorized Mineral Spirits, but a true Odorless Thinner is a special "crack" of petroleum which has little if any more odor than water. It is considerably more expensive than Mineral Spirits, but in connection with other low-odor paint ingredients it has made it possible to paint rooms even when occupied with considerable less discomfort even to sensitive occupants. **Even as little as 5% addition of conventional solvents at the application stage, however, will not only destroy this desirable odor-free feature but will also affect very seriously the consistency, holdout and other features of the coating.**

Certain specialized coatings such as the Chlorinated Rubber Coatings used for exposure to acid and alkali conditions require what is known as a "strong solvent," and these are found in the range of Coal Tar Distillates known as Xylol and Toluol. These are vital to the proper application and proper drying of such specialized coatings, but they have to be used under conditions of good circulation and ventilation since they have very low flash points and are both very pungent and somewhat toxic. **Their high solvency is also the reason why the coating in which they are used must be applied with care over conventional coatings in repaint work, for they have a tendency to soften and "lift" these conventional coatings when applied over them.**

Among the many advantages of the Latex, Vinyl, Acrylic and other water emulsion coatings is that if they need reduction on the job it is done with ordinary water right out of the tap. This eliminates the need for having special and often combustible and odoriferous solvents on the job, and also means quick "clean-up" in that painting equipment can be cleaned quickly and easily with ordinary soap and warm water. **This must be done promptly, however, for once the water-paint film starts to "set up" it is impossible to get it out of the equipment, off floors or even out of clothing.**

ADDITIVES, or "medicines" as they are sometimes referred to with awe by paint formulators, can be divided somewhat roughly into three types: (1) Production Aids, (2) Trouble Reducers and (3) Result Producers.

Stabilize Driers

Among the Production Aids are substances which help to stabilize the driers in the vehicle, help in the proper wetting of the pigments, and, in water paints, act as emulsifiers to produce the necessary emulsions.

Trouble Reducers help to give the coating proper "package stability" during the period between manufacture and use. They preserve unstable substances like Casein in latex paints, prevent undue foaming in water base paints, keep coloring pigments from "flooding" or floating, keep the mixture from skinning or gelling in the can, and keep water base paints of all types from deterioration through freezing.

Give Coating Body

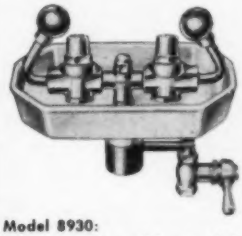
Among the Result Producers are additives which help give the coating the desired body or holdout properties, permit heavy applications without danger of sagging for better protection on or better hiding, give the dry film the desired sheen. Finally, in highly specialized finishes, are the additives which, along with specialized combinations of pigment and vehicle, produce germicidal and fungicidal coatings.

In this connection, most mildewcides are mercuric and therefore highly toxic. But a new non-toxic type is now available and, though more is required which makes, it more expensive, it has been thoroughly tested and it does the job in food plants where obviously the toxic types cannot and are not permitted to be used.

From an address presented at the Food Processing Section of the Institute of Sanitation Management.

Protect Eyes

with **HAWS EMERGENCY EYE-WASH FOUNTAINS**



Model 8930: Basic eye-wash model; enameled iron bowl, chrome plated brass heads. HAWS also offers eye and face wash fountains and drench showers.

Chemicals, foreign particles, caustics – all mean DANGER to eyes! Instant relief is vital! HAWS Eye-Wash Fountains flood the eyes with controlled water streams – soothing, relieving until medical aid arrives. Fool-proof operation activates fountain instantly, possibly avoiding permanent injury. HAWS Emergency Facilities are also widely used for routine cleansing of eyes as a precautionary measure. Write today for illustrated literature on HAWS complete line of emergency facilities.

HAWS DRINKING FAUCET CO.
(Since 1909)
1443 FOURTH STREET
BERKELEY 10, CALIFORNIA

(For details, use Key # O-14 on card on page 1)

What's the Law?

(from page 30)

SAFE PLACE TO WORK—Farm and Farmer—Goring by Bull—Action Under Employers' Liability Law

The lower court properly sustained the defendant's motion for peremptory instructions on the ground that a bull did not have such vicious propensities as to make the owner liable for injuries committed by it. The plaintiff, an employee on the defendant's dairy farm, was gored and mauled by his employer's Holstein bull while discharging his duties. The evidence showed that the defendant owned this bull for four years, and that he had been docile except for one time when another employee had kicked the bull in the head because it wanted to follow the dairy cows from the barn. Thereupon the bull charged the employee and ran him into the barn loft. The court held that the owner or keeper of domestic animals is not liable for injuries to third persons, unless the animal was accustomed to injure persons, or had an inclination to do so, and the vicious disposition of the animal was known to the owner or keeper. The court stated that, when the fellow employee kicked the bull in the head and the bull then charged him, it was acting under extreme provocation; that its reaction was perfectly normal and such reaction would not put it into the category of a dangerous animal. Affirmed.

Sherwood v. Patrick; Tennessee Court of Appeals, Eastern Section. Nov. 3, 1959.

Fourteen plants of The Firestone Tire & Rubber Company completed the first nine months of 1959 without a lost time injury. A Firestone safety department report revealed that the Akron synthetic plant was among the first 14 with an accident frequency rate of 0.0.

The accident rate of all Firestone plants of 1.4 was well below the national average of 3.5 for all operations covered in the study.

Other Firestone plants which accumulated injury-free records were Pottstown, Pa., plastics plant; Los Angeles, Calif., fuel cell division, xylos and industrial products division; Buenos Aires, Argentina, textile plant; New Castle, Ind.; Ravenna, Ohio, Arsenal; New Bedford, Mass.; Havana, Cuba; Orange, Tex.; Bennettsville, S. C. and Magnolia, Ark.

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Employees of oil companies are 3½ times safer on the job than they are at home, according to the current edition of "Oil Facts," an official publication of the American Petroleum Institute. The report showed relative fatality rates for oil workers on and off duty stood at 14.5 and 53.1 respectively for every 100,000 workers. And the oil industry is consistently scoring new records in lowering accident frequency and severity rates. In 1958 accidents occurred at the rate of 7.00 for every one million hours worked. It was the seventh straight year the industry cut its accident frequency rate.

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Employees at the Chemstrand Corporation's nylon plant in Pensacola, Fla., recently completed 17,106,186 consecutive man-hours without a disabling injury to set a new world's safety record for textile plants, exceeding the record they set in 1957. The achievement drew citations from national, state and local officials who noted that the plant already is holder of eight Awards of Honor from the National Safety Council.

The Chemstrand nylon plant employees had worked a total of 17,106,185 safe man-hours in mid-1957 when a maintenance worker was injured while cutting grass. They had passed the previous all-time high of 13,624,000 man-hours in March of that year, Fred G. Gronemeyer, vice president and director of nylon manufacturing, said. "This new record," Gronemeyer said, "indicates a continuing safety-consciousness on the part of all of our employees. Constant effort is required, and I am sure that the fact we have now established a new record will not cause us to relax that effort. Although I am proud of the record and the part each of you played in building it, I would like to regard it, not as an accomplished goal, but rather as a beginning toward making our plant the safest industrial operation in the world."

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Employees of Stanley Steel, division of The Stanley Works, were presented with a bronze plaque recently as an award for achieving 365 days or 642,436 man hours without a disabling injury. This was accomplished as of August 2. At presentation time, they had actually worked 451 days or 787,453 man hours.

In commenting on the award, Harold E. Pape vice president, pointed out that the employees were to be congratulated on an exceptionally fine record as the steel mill is classified as a heavy hazardous industry where steel coils weighing from 100 to 15,000 lbs. are handled. Although much of the material handling is accomplished by mechanical means, considerable manual effort in processing the steel from the hot rolled raw stage to that of the finished product is done manually. He said it was only through the wholehearted cooperation of all employees and supervisors and the recognition of individual responsibility and safety-consciousness that this record was made possible.

• • •

The Greist Manufacturing Company, New Haven, Conn., has received the National Safety Council's annual first-place award for outstanding achievement in the light metal fabricating division of the Metals Section Safety Contest.

Everett Martin, director of educational projects, Liberty Mutual Insurance Company and president of the New Haven Safety Council made the award to Merritt D. Vanderbilt, president, and Hubert M. Greist, vice president-manufacturing, of the Greist organization. The award was achieved for not having a single disabling accident from September 30, 1958 to October 1, 1959.

In his speech of acceptance, Greist stated, "The effort of each employee is responsible for this remarkable record and the company is very proud of the support that our employees have given to their safety program. Special thanks are in order for our industrial nurse, Miss Doris MacEslin, who has devoted much of her effort and time

to improving our health and safety programs."

Out of a total of 526 employees, Greist Manufacturing utilizes a plant and productive work force of 423 persons including six supervisors and ten foremen. Its medical department is staffed by a full-time industrial nurse. In addition, a plant physician makes one visit per week to provide physicals and other treatment as may be required. An eye doctor, to direct the plant's eye safety program, is also retained to make one visitation per week.

In their manufacturing facilities, Greist employs many electrically operated and hydraulically powered kick presses, punch presses, grinders, drill presses, millers, shapers, plating, heat-treating, and paint-spray equipment, etc.

Prior to this most recent award, Greist had received special recognition from the National Safety Council for the years 1955–1956 and 1956–1957 for reducing the frequency of disabling accidents.

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An outstanding record in industrial plant operation was marked recently when Schick, Inc. was awarded the Pennsylvania Manufacturers Association plaque for having worked three million man hours without a disabling accident. It covers the period from Oct. 1, 1957 to Nov. 1, 1959. Chester G. Gifford, Board Chairman, said the company's success in preventing accidents is the result of a high degree of safety consciousness on the part of supervisors and excellent cooperation by other employees.

• • •

An award was presented to Appleton Electric Company recently commemorating two million man hours of operation without a disabling injury within Appleton's Chicago Plants. The achievement award plaque was presented to Mr. K. O. Schneider, Vice President in Charge of Manufacturing, and Mr. Comyn C. Drake, Director of Training and Safety, for Appleton Electric Company by Mr. Joseph E. Magnus, Vice President of Lumbermen's Mutual Casualty Company, which insures Appleton for workmen's compensation.

"I want you to meet Preminger, our . . . ex-, as of now, safety director."

The company employees began their safety record on January 20, 1959. The first safe million man hours was observed last May 19 at which time the company's Chicago Plant received honorary achievement plaques by the National Safety Council and Lumbermen's Mutual Casualty Company.

Accidents at the Appleton Electric Company have been decreasing consistently since 1956. This was the year that Mr. Schneider and Mr. Drake began an accelerated program to stress the importance of employee safety to themselves and their families.

• • •

George J. Schwartz was honored as "Driver of the Month" for his record of fourteen years of continuous, accident-free driving. During that time he has logged over 200,000 miles for Horace T. Potts Company, delivering steel bars, plates and other steel warehouse items in the most heavily congested areas of Philadelphia. The Pennsylvania Motor Truck Association, in announcing the award, stated that his safety record actually includes 32 years of driving without an accident.

• • •

The Case of the Lanyard that broke the Fall, and the Man!

The lanyard was strong enough, the anchorage was solid—but the man in the case wasn't so solid. He was seriously—perhaps fatally—injured, because his lanyard had strength alone, but not the resilience needed to s-l-o-w the fall and minimize the shock!

Safe-Hi **Unolyn Shock Absorber for Lanyards**

is engineered to provide *stretch* to decelerate the falling man *gradually* without damaging shock or rebound. The *stretch* must be in the lanyard *not* the belt. Safe-Hi Safety Equipment *is* safe—just as safe as continuing research and a lifetime of experience can make it. Complete information on Safe-Hi Unolyn Shock Absorber Lanyards, Safety Belts, Ladder Shoes . . . yours FREE. Just write for Catalog.

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(Use Key # O-15 on Inquiry Card on page 1)

inside the trade

George F. Quayle, assistant director of engineering of *Yale Materials Handling Division, THE YALE & TOWNE MFG. CO.*, has been placed in charge of new product development, by O. S. Carliss, Yale director of engineering. A veteran of 37 years in the development and engineering of Yale industrial lift truck equipment, Quayle has held his present assistant directorship since 1952.

E. Willard Merritt 1898 — 1959

E. Willard Merritt, 61, a Director and General Sales Manager of the *Walter G. Legge Company, Inc.*, died on December 19th at a hospital in New York.

In 1930, Mr. Merritt joined the Walter G. Legge Company, Inc. where he became a specialist in the control of static electricity hazards in hospital operating rooms, ordinance plants, etc. He was active in the development of the original anti-slip floor polishes in industry, public buildings, etc.

Mr. Merritt was President of the Veterans of Safety, Past Chairman of the Metropolitan Chapter—American Society of Safety Engineers, and served on various committees of the Greater New York Safety Council.

He was the author of numerous articles on walkway safety published in "Safety Maintenance" and other journals.

FIBRE-METAL PACIFIC at 7332 South Garfield Avenue, Bell Gardens, Calif. has announced that *Paul Chatterton* has joined the Sales Department and will cover the States of Washington, Oregon and Idaho on a wholesale basis calling on distributors of welding and safety equipment. Chatterton holds a degree in Mechanical Engineering, and has actively participated in welding and safety affairs for 30 years.

Fibre-Metal Pacific distributes on an exclusively wholesale basis to distributors of welding and safety equipment, the line of FIBRE-METAL products, Glendale Optical products, Beldon Welding Cable, and a number of associated and allied lines.

WHEELABRATOR CORP. has acquired approximately 80% of the controlling stock of *Lord Chemical Corp.*, York, Pa., according to James F. Connaughton, President of the Indiana firm. As a majority-owned subsidiary of Wheelabrator, Lord Chemical will continue to operate in York, manufacturing its line of vibratory and barrel type finishing equipment, including compounds and media for cleaning, deburring, and precision finishing of metal parts.

The appointment of *McConvry-Mudge Limited*, 28 Advance Road, Toronto 18, Canada, as exclusive distributors of TUBAR Materials Handling Equipment for the Dominion of Canada, has been announced by the manufacturers, *UHRDEN, INC.*

The formation of *CHANEY PRODUCTS*, a company manufacturing and distributing materials handling equipment, has been announced by I. L. Chanenson, formerly sales manager of the Materials Handling Products division of Elizabeth Iron Works, Inc. Offices of the new company are located at 711 Livingston Road, Elizabeth, N. J.

Chaney Products will specialize in the manufacture of all-steel ramps for use between loading platforms and railroad cars or trucks. Chanenson announced the purchase from Elizabeth Iron Works of basic patents and designs on a variety of products. Distributors who handled the line for Elizabeth Iron Works will continue to do so for Chaney Products.

The appointment of *John G. Maye* as sales representative for the Milwaukee, Wisconsin territory has been announced by *LEWIS-SHEPARD PRODUCTS, INC.*, manufacturers of electric fork lift trucks and related materials handling equipment. Mr. Maye's headquarters are at 1915 West Vliet Street, Milwaukee 5, Wisconsin where complete sales and service facilities are maintained.

A new trade organization, the *INDUSTRIAL GAS CLEANING INSTITUTE, INC.*, has been formed by representatives of leading manufacturers of gas cleaning equipment. The new non-profit group has elected John T. Doyle, The Thermix Corp., Greenwich, Conn., as its first President.

Other officers elected at the organizational meeting were L. L. Andrus, Wheelabrator Corp., Mishawaka, Ind., Vice President; and John G. Liskow, American Air Filter Co., Louisville, Ky., Treasurer and Temporary Secretary.

Industrial Gas Cleaning Institute has as its purposes to promote the interests of manufacturers of industrial gas cleaning equipment; to provide for improved trade practices among its members; to produce a greater interest among the public in the manufacturing, engineering and public safety as they relate to industrial gas cleaning; to perfect the standards of design and operation of gas cleaning equipment; to encourage the development of the science and art of engineering as related to industrial gas cleaning equipment and/or device; to perfect the standards of testing in the various fields served by industrial gas cleaning equipment; to collect and disseminate lawful information of value to members of the Institute, the industry, and the public regarding the several products of the industry and their application to industrial gas cleaning; to cooperate with and assist all governmental departments, agencies and bodies in regard to matters affecting the industry.

A new company, the *AMERICAN SAFETY EQUIPMENT CORP.*, Empire State Building, New York City and Rochester, New York, has been established to market safety devices in all fields. The A. S. E. C.'s first product line is Hickok Automotive Safety Belts which it will market and promote as the sole licensee for Hickok. Hickok, whose product was developed by the Cornell Aeronautical Laboratories, Inc., will continue to manufacture the belts to meet S. A. E., governmental specifications and all state standards.

Kenneth Krasnow, an executive in the belt field for many years, is president of the American Safety Equipment Corporation. *F. Dean Johnson* is executive vice president. Mr. Johnson was formerly vice president of Hickok and directed the Automotive Safety Division.

Victor F. De Vinny has been appointed Sales Manager of *WHISTLCLEAN CORP.*, a subsidiary of L. Sonneborn Sons, Inc., New York. The Whistlclean Corp. manufactures and distributes a complete line of industrial detergents for all types of industries. Mr. De Vinny has had extensive experience in the industrial cleaning field.

Appointment of *Elwyn H. Pfaender* as sales representative for cement-asbestos board products, has been announced by *UNION ASBESTOS & RUBBER COMPANY*, Fibrous Products Division, Bloomington, Illinois. Mr. Pfaender is spearheading a marketing and promotional program for a new inorganic cement-asbestos hardboard with unusual strength, dimensional stability and heat resistance. He is working out of UNARCO's Bloomington headquarters to service hardboard customers throughout the country. A graduate of Grinnel College, (B. A., 1955) Mr. Pfaender served as a navigator in the U. S. Air Force with the rank of 1/Lt.

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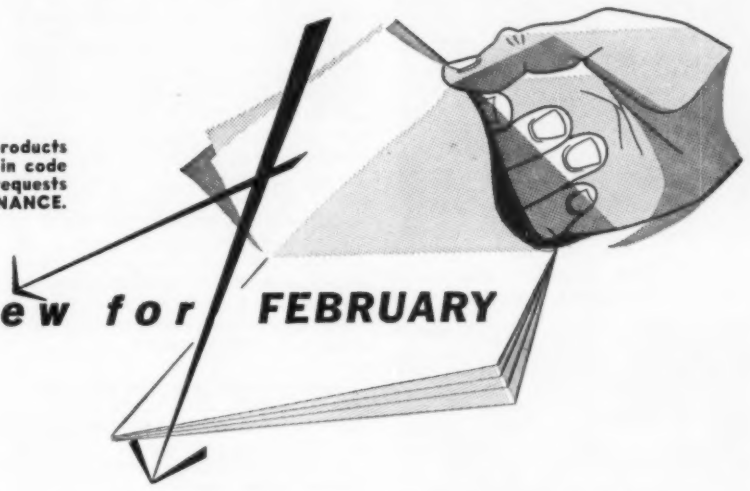
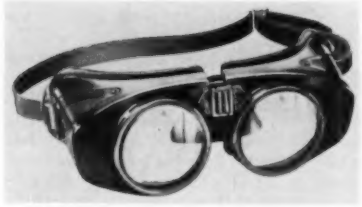


what's new for FEBRUARY



WELDERS & CHIPPERS GOGGLES

(Use Key # 600 on Inquiry Card on page 1)

TWO NEW American Optical coverglas goggles for welders and chippers are said to fit 99% of the users. In addition to fitting over all types of prescription spectacles, the goggles utilize standard 50 mm. round lenses, to reduce lens stocking.

The chippers goggle, No. 325, has perforated aluminum side shields for direct ventilation, adjustable leather bridge, and is available with either a rigid bar bridge or adjustable rigid bridge. It is supplied with clear lenses. The welder's model, No. 329, is of identical construction except for indirectly ventilated side louvers. It is supplied with Filterweld No. 5 shade lenses for protection against injurious light radiation, glare and flying sparks. Both frames are cellulose acetate.

COLORED FIRE HOSE

(Use Key # 601 on Inquiry Card on page 1)

BRIGHTLY-COLORED fire hose for fire stations and industrial concerns has been announced by the Goodyear Tire & Rubber Co. Standard colors are red, yellow, black and white. In addition to decorative value, colors have identification value. Red is suggested for fire protection lines; yellow for poorly lighted areas such as mines; black for use in locations where dark discoloring materials prevail. A dacron jacket impregnated with neoprene rubber is highly resistant to oil and chemicals.

In addition to the D-500 hose, designed for service pressures up to 500 pounds per square inch, the D-600, withstanding 600 pounds, is available in white.

NEW LANYARD SHOCK ABSORBER

(Use Key # 602 on Inquiry Card on page 1)

THE UNOLYN Shock Absorber for safety lanyards, prevents the damaging jolt resulting from a fall. If a shock absorber is not attached to a safety lanyard, a fall sometimes causes severe internal injury or possible death. Safety men can be sure their high workers are using the shock absorber by splicing the absorber directly into the belt. The Rose Manufacturing Company also makes the shock absorber separately with a loop splice or snap at ends to attach to any safety lanyard. If

necessary the absorber will stretch to full length depending upon the impact.

Made of ⅝" undrawn nylon chemically treated for impact safety, the absorber is 10 inches long when coiled and will stretch to 50 inches if necessary. There is no rebound even though the shock absorber is stretched to its full length.

ADHESIVE PIPE & WIRE MARKERS

(Use Key # 603 on Inquiry Card on page 1)

A COMPLETE line of Speedy-Marx pressure sensitive markers and signs are now available from North Shore Nameplate Inc. on quick-release Red Rocket cards. These dispensers enable markers to be peeled off easily, smoothly, and applied without distortion, the company reports. The cards are coated with a specially compounded film which releases the waterproof markers instantly. The coating completely protects the adhesive qualities of the signs and markers, and assembled units have unlimited shelf life.

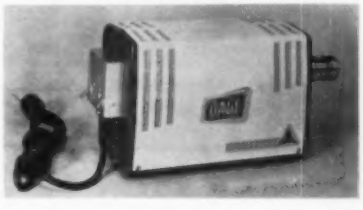
Speedy-Marx waterproof vinyl markers include all standard pipe, wire and electrical markers, accident-prevention signs, numerals and letters, identification signs. They remain unaffected by grease, dirt, oil and abrasion, are always legible, and conform to NEMA-ASA specifications.

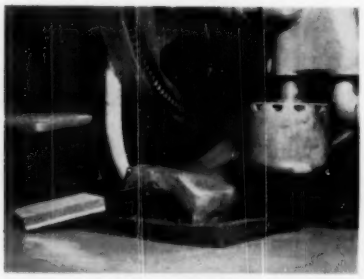
INDUSTRIAL TV CAMERA

(Use Key # 604 on Inquiry Card on page 1)

A CLOSED-CIRCUIT TV camera combining rugged construction with optimum picture quality has been developed by Dage Television Div., Thompson Ramo Wooldridge, Inc. Model 70-A is designed for heavy-duty industrial use as well as general closed-circuit applications, and features a newly-developed transistorized video amplifier which eliminates microphonics and provides 600-line resolution. New electronic circuits automatically make instantaneous adjustments to variations in light levels.

Other features include on-chassis controls to regulate horizontal and vertical size, linearity and centering, and adjustments for beam and black level. Low internal ambient temperature rise and a cast aluminum case contribute heavy-duty and long-life characteristics to the unit. Completely self-contained, the camera requires only 45 watts of 115 volt 60 cycle power to be placed in operation.





NOISE ABSORBING MACHINE PADS

(Use Key # 605 on Inquiry Card on page 1)

A LINE OF vibration-damping felt pads in ½ and 1 inch thicknesses is available from Mike Krasilousky Trucking & Millwright Co. Instead of permanent mountings, adhesives are used to cement the Red-White-N-Blue Vibra-Sorb pads to the floor and base of the machine. If equipment is moved, no holes or marks are left in the floor. Savings as much as 70% are claimed on installation costs, as compared to conventional shock-mountings; and maintenance upkeep is also reduced.

Pads, which are oil-resistant and unaffected by water and most solvents, are reported to reduce transmitted vibration up to 85%. Because of their high resiliency and low compression set, they furnish long service with minimum maintenance.

HEAVY-DUTY CLEANER-DEGREASER

(Use Key # 606 on Inquiry Card on page 1)

A HEAVY-DUTY, fireproof detergent and degreaser, combining an effective wetting agent, detergent, and alkaline salts, is offered by the Selig Co. They report that CP-43 will solve the most difficult cleaning problems in the aviation and trucking industries, commercial establishments, and in all other branches of industry.

ADJUSTABLE SPATULA TEMPLES

(Use Key # 607 on Inquiry Card on page 1)

UNIVERSAL FITTING, spatula type, Retrax temples are available on Watchemoket Optical Co.'s new Rapido line of custom-fit frames. These temples are designed to satisfy style requirements, eliminate fitting problems and reduce inventory, by making it unnecessary to stock a number of sizes. The wearer simply slides the spatula ear piece in or out of the temple member for a perfect, comfortable fit, with a no-pressure grip behind the ear.

VERSATILE VACUUM CLEANER

(Use Key # 608 on Inquiry Card on page 1)

A HEAVY-DUTY vacuum cleaner incorporating the equivalent of four ordinary cleaners has been announced by the Black & Decker Mfg. Co. The No. 25 may be used as a conventional unit, or, utilizing a wall mounting bracket, become a fixed-in-place wall vacuum, or, with an adaptation of the bracket, be utilized for cleaning automobile interiors; lastly, a pair of straps permits an operator to don it like a pack and move into such confined spaces as stockroom aisles. Removal and replacement of disposable paper bags is easily facilitated. Unit also features splash-proof construction.

FIBERGLASS STEPLADDER

(Use Key # 609 on Inquiry Card on page 1)

A NEW STEPLADDER, available from Putnam Rolling Ladder Co., incorporates the non-conducting qualities of fiberglass reinforced materials with the lightweight strength of metal. The ladders are particularly suitable for use in industrial

plants and in power and electrical work. When tested under room conditions of 50% relative humidity, the ladder did not break down when a maximum of 120,000 volts was applied between the rungs, the company reports.

The flat steps and the back rungs are of aluminum. Safety shoes are an integral part. The solid balsa wood core gives excellent deflection results, with the strength advantages of a sandwich construction. Available in 3 ft. to 18 ft. sizes, in one foot increments.

"EXOTIC" FUEL GLOVES

(Use Key # 610 on Inquiry Card on page 1)

GLOVES MADE from butyl rubber have been developed by the Olympic Glove Co. for use with many new "exotic" missile fuels and similar highly corrosive compounds. It is reported that manufacturers of these fuels recommend the use of butyl rubber as the best, the safest and, in the long run, the cheapest protection in handling their products.

ACOUSTICAL PARTITIONS

(Use Key # 611 on Inquiry Card on page 1)

A COMPLETE LINE of movable wall and portable partitions for the effective control of noise is available from GR Products, Inc. Soundex walls, up to 10' in height, consist of sturdy gypsum boards which are placed in the center of a panel. This provides a sound stop or solid core which also acts as a diaphragm. 1¼" layers of fiberglass are placed on each side of the baffle to absorb sound as it passes into the wall or vibrates off the baffle. Sheets of tempered prestwood "skin" are placed over both sides of the panel.

Budgex walls have the same construction except that their non-perforated surfaces make a center baffle unnecessary. Each type of wall is equally effective in sound control, depending on the problem to be solved. Soundex walls are used where a noise problem exists within a room. When it is necessary to stop transmission of sound from one room to another, a Budgex installation is recommended. Where a combination problem exists, the two wall types are used in conjunction.

In addition to their acoustical value, the walls are highly functional and decorative. Simplifying mechanisms enable installation or changes to be made with a minimum of disturbance to normal work routines.

DRY CHEMICAL HOSE RACK UNITS

(Use Key # 612 on Inquiry Card on page 1)

RECENTLY INTRODUCED fire extinguishers, manuafctured by Walter Kidde & Co., Inc., include the new 200 and 400 pound dry chemical hose rack units which may be wall, floor or truck mounted. These giant units are designed for use on severe electrical, LP gas, or flammable liquid fires. Also available are new 2½, 5, 20 and 30 pound pressurized dry chemical portables and 2½ gallon pressurized water and loaded stream extinguishers. All feature simplified operation.

HIGH VISIBILITY VESTS

(Use Key # 613 on Inquiry Card on page 1)

A BIB STYLE red flagman's vest made of fluorescent vinyl bonded to nylon fabric, has been developed by Industrial Products Co. to provide greater personal safety for utility, maintenance and construction crews working on or near highways, and also for signalmen, railroad workers, school crossing guards, etc. Coated and polished on both sides, and completely reversible, front to back and inside to outside, the vest furnishes a solid red warning panel across wearer's chest and back. Supplied in a universal fit.

EMERGENCY OXYGEN RESUSCITATOR

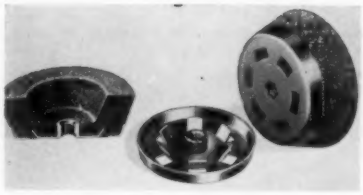
(Use Key # 614 on Inquiry Card on page 1)

A PORTABLE emergency oxygen resuscitator, attachable to any type or size oxygen supply tank without the use of a wrench, the Oxy-Quik, has been announced by General Scientific Equipment Co. The low-cost unit, which weighs only two and a half pounds, includes a face mask, a rebreathing bag, two oxygen cylinders, carrying case, and an automatic pressure-reducing regulator and gauge, which permits control of oxygen flow at approximately six liters a minute throughout the twelve minute capacity of the tank. Adaptors available for use with commercial cylinders.

SWIVEL ACTION SIGN FRAMES

(Use Key # 615 on Inquiry Card on page 1)

SWIVEL ACTION sign frames for attractive permanent, low-cost installation, are offered by the Mulligan Corp. There is no damage to the frame when struck by maintenance personnel or moving equipment; frame merely folds back against the wall, and can be immediately returned to proper position. Unit consists of extruded aluminum sections, stainless steel screws and heavy transparent vinyl. Available in different sizes.



SAFETY GUARD INSERT FOR GRINDING WHEELS

(Use Key # 616 on Inquiry Card on page 1)

GREATLY INCREASED safety in the use of angle portable grinders is accomplished with the use of a new Safety Guard Insert, claims the manufacturer, Carroll Pressed Metal, Inc. Without sacrificing any of the grinding surface, the built-in guard locks in the wheel between the extruded prongs and the outside guard, and between the prongs and the center nut. The company claims the grinding wheels mounted with this unit are 25% to 40% safer to use than those equipped with separate conventional protection. Safety Guard Insert is also said to eliminate the need of reinforcing rings, pronged anchor bushings, and individual mounting nuts.

TRANSISTORIZED INTERCOM SYSTEMS

(Use Key # 617 on Inquiry Card on page 1)

A NEW CONCEPT in sound systems, introduced by Executone, Inc., utilizes transistorized pre-amplifiers to achieve distortion-free reproduction of voice page messages and background music—even in auditoriums, arenas, terminals, etc., where input lines must be run long distances. One pre-amplifier is located adjacent to, or built into, every microphone, radio tuner and record player in the system. This pre-amplifier boosts the signal produced by voice or music source and makes it strong enough to travel long distances to the mixer without noise pickup or other decrease in the quality of sound reproduction.

Input and output lines may be run in the same conduit without interference, eliminating some conduit runs. Much expensive power wiring can be eliminated, since the transistorized pre-amplifiers and mixers require no 110-volt AC connection. Plug-in miniature terminal blocks used throughout the system and plug-in relay controls on the power boosters make for less costly installation and service. Many components of the new sound line (including the mixer, which controls volume for up to 21 microphones from a single point), are available in flush-mounted, surface-mounted and desk models, to blend in with the over-all design of the building.

WINTERIZED ROOF COATING

(Use Key # 618 on Inquiry Card on page 1)

A NEW WINTERIZED formulation of their Fibre Glass Supercote Roof Coating has been developed by The Garland Co. The coating contains a special additive,

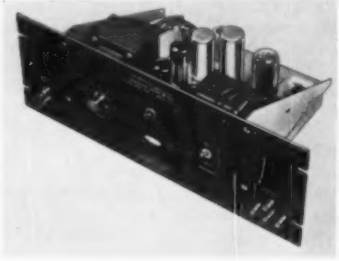
Thermo-Flo #17, which assures easy application in the coldest weather. The formula keeps the coating fluid, regardless of temperature, and even assures good adhesion on damp or frost-covered roofs. Properties of the roofing are not affected.

INDUSTRIAL AMPLIFIER

(Use Key # 619 on Inquiry Card on page 1)

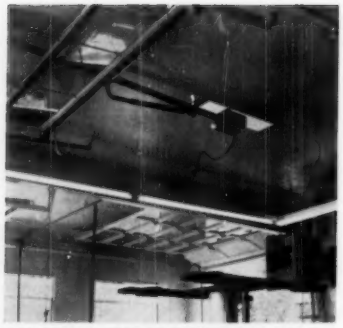
A POWER AMPLIFIER designed specifically for industrial and laboratory use is available from H. H. Scott, Inc.

The 250-AR is conservatively rated at 40 Watts. It is designed for such varied uses as production testing of loudspeakers, test signal distribution systems, variable



frequency power source, meter calibration signal supply, utlrasonic experiments, anechoic chambers, etc.

The 250-AR, of all aluminum construction, fits a standard relay rack and occupies only seven inches of panel space. Input and output terminals are available at both front and rear. Binding posts on ¾ inch centers accept standard laboratory plugs or wires. High damping factor gives stable output and excellent regulation with any type load. Amplifier furnishes—40 watts output for 0.5 volt input, and has extremely low distortion, wide frequency range (12 cps to 60 kc.), and low internal noise and hum.



AUTOMATIC OPENER FOR OVERSIZE GARAGE DOORS

(Use Key # 620 on Inquiry Card on page 1)

A HEAVY-DUTY automatic overhead door operator, designed for oversize garage doors, has been announced by The Alliance Manufacturing Co.

Called the Genie Model 410, the unit provides a reliable lifting force of 250 pounds, sufficient to operate garage doors up to 10 feet high and 20 feet wide. It automatically unlocks and opens or closes and locks the door at the push of a button, and simultaneously turns garage lights on or off. Unit employs a single button control for all operations.

Either sectional or solid overhead doors can be handled by the Genie 410, which can provide a straight vertical lift to 21 inches. A ½ horsepower motor supplies the extra torque needed to handle king-size doors, and assures safe, quiet, reliable operation. A built-in safety feature automatically stops the door at the slightest interference. If power failure occurs, door can be released from the operator by pulling a convenient disengaging latch. Model available with radio controls.

RUBBER SAFETY PAIL

(Use Key # 621 on Inquiry Card on page 1)

AN 18 QUART molded-rubber pail made with neoprene has been announced by Fortex Industries, Inc. This pail, the NPL 80-18, is designed to resist the strongest acids, gasoline, kerosene, jet fuels, oils, greases, brake fluid, paints, chemicals, etc. Molded in one piece and reinforced with fabric for added strength, it will not leak, crack or bulge. cannot be crushed or lose its shape, and will not mar surfaces, it is claimed.

The company also states that the pail will not be harmed by extremes of heat or cold. Since it does not spark when scraped or dropped, it is useful for handling octane fuels in automotive, aviation, oil refineries, heavy industry, etc., as well as for chemical and general utilization. Pail is graduated in quarts and half gallons, and has a pouring lip and rubber covered handle. Also available in 10 and 12 quart capacities.

BATTERY POWER MEGAPHONE

(Use Key # 622 on Inquiry Card on page 1)

A HAND HELD 2½ lb. public address system, powered by flashlight batteries,

was recently introduced by Antrex Corp. Equipped with pistol grip and a trigger switch for instant on/off operation, the Calamity Jane power megaphone amplifies the user's voice so that he can be heard up to ¼ mile away. The completely weatherproofed, all-metal megaphone is instantly ready for use.

SAFETY GLASSES WITH TWO UNIVERSAL FEATURES

(Use Key # 623 on Inquiry Card on page 1)

SAFETY GLASSES that will fit the vast majority of workers are offered by Chicago Eye Shield Co. Polyfit plastic frames with two universal features are designed

to simplify inventory. Polyfit bridge design fits comfortably on nearly all individuals; and nickel-silver temples are also interchangeable with most safety glasses equipped with 5-barrel hinges. Tapered temples are available in cable or spatula styles. Frames with or without side shield according to user's preference.

BACK PACK RESUSCITATOR

(Use Key # 624 on Inquiry Card on page 1)

A NEW MODEL of the Back Pack resuscitator, more compact, lighter in weight and contained in a sturdy aluminum case, is offered by the National Cylinder Gas Division of Chemetron Corp. This model is easily strapped on the back by a rescuer and is more comfortable to carry. It makes it possible to reach trapped or injured victims seconds or minutes earlier with life-saving oxygen, as the rescue worker has both hands free to crawl, climb ladders or remove debris.

The unit has dual outlets, permitting connection of a second resuscitator head and face mask so the bearer can also supply oxygen to himself when working in contaminated areas. Complete with its two oxygen cylinders it weighs less than 30 pounds. The Back Pack is used in three ways: as a resuscitator, inhaling and exhaling for a victim until his breathing is restored; as an inhalator, continuously supplying oxygen; and as an aspirator, removing obstructions from the throat. It is employed on victims of drowning, suffocation, heart failure, shock, gas poisoning and accidents.

NEW COUNTING PUMP

(Use Key # 625 on Inquiry Card on page 1)

A HIGH-VACUUM hand pump with a horizontal counter, for petroleum products, is available from the Tokheim Corp. The new Series 588 is similar to other Tokheim hand pump models, delivering on both forward and back strokes, but operates with one instead of two diaphragms. It pumps up to 15 gallons per 100 strokes, and is built to withstand rugged farm or industrial use.

The counting mechanism is calibrated to the stroke of the pump and provides essential gallonage figures for users' records. It counts up to 100 gallons per fill and totals up to 10 thousand gallons, measuring on a full or partial stroke. The counter may also be installed on Tokheim 688 hand pumps.

Series 588 pumps come in a variety of models. Features include a flexible diaphragm of tough, molded synthetic, stainless steel valve assemblies, vacuum breaker, self-venting bung adaptor, self-adjusting suction pipe and removable suction screen. Both hose and spout models are available for drums, skid tanks and underground tanks. Foot valve with built-in adaptor is installed directly to sliding suction pipe.

LUBRICATION MARKERS

(Use Key # 626 on Inquiry Card on page 1)

AN ECONOMICAL method to insure regular and correct lubrication of machinery and equipment is announced by W. H. Brady Co. It utilizes self-sticking Brady Lube labels to identify lubrication points, tell the types of lubricant to use, and indicate frequency of lubrication. The system is designed to save labor and supervision time, and by assuring proper lubrication, saves equipment failure, costly repair and replacement, and production line down time. The Labels may be applied to flat, curved or irregular surfaces. No glue, water, chemical activators, paint or tools are needed. Once applied, they stay stuck until purposely removed.

The Labels are made from tough, self-sticking vinyl material. They are highly resistant to oil, grease and abrasion, and the printing is sealed-in and protected. Available in a variety of fadeproof color-number combinations to identify different greases, oils and fluids.

Other labels indicate lubrication frequency and mark lubricant dispensers and containers.

APPROVED FLOOR POLISH

(Use Key # 627 on Inquiry Card on page 1)

A RESIN-TYPE water emulsion floor polish, Legsure, has been awarded the York Research Corporation's Seal of Approval after tests to determine its leveling and spreading properties, length of drying time, resistance to water spotting, etc. Slip- and scuff-resistant, product furnishes high gloss with or without buffing. Manufactured by Walter G. Legge Co.

REPAIR SEALER KIT

(Use Key # 628 on Inquiry Card on page 1)

A SEALER KIT consisting of twenty-four individually packaged units of epoxy sealer—each containing enough material for a typical repair job—is available from Epoxylite Corp. The sealer in the #1-S kit combines outstanding electrical insulating properties and high chemical resistance with tenacious adhesion to almost all materials. It may be applied in any desired thickness and will cure overnight at temperatures above 70 F, or in just a few minutes with heat lamps.

The sealer will bond to most metals, glass, ceramics, most plastics, rubbers, stone, wood, concrete, etc. The bond is waterproof, weatherproof, shock and impact resistant, and serves from -65 F and below to above 200 F.

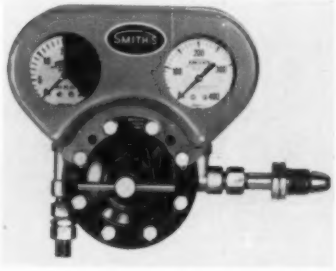
The product may be used to renew

damaged blocks of electrical insulation, to seal cables, pipes, and splices, to join dissimilar materials, to protect components from chemical attack, etc. When used in connection with glass-cloth reinforcement, it will give structures stronger (on a weight basis) than steel.

SYNTHETIC FIBER SLINGS

(Use Key # 629 on Inquiry Card on page 1)

SLINGS MADE of nylon, dacron or polypropylene, offered in five styles with three types of hardware for various applications, are available from American Manufacturing Co. The extremely light weight of the slings eliminates the danger of men being harmed, the company asserts. The softness of the synthetic fibers permit highly polished surfaces, machined or painted finishes and delicate assemblies to be moved without marring, scratching or denting. Flexible sling can conform to any shape.



WELDING SAFETY REGULATOR

(Use Key # 630 on Inquiry Card on page 1)

A REGULATOR with new safety features for the welding industry is being marketed by Smith Welding Equipment Corp. The Saf-T-Pak Regulators "Hard-hat" encloses ordinarily exposed gauges, protecting them from exterior abuse, and contributing to long, trouble-free life. The "Flo-trol" on the down stream side prevents reverse flow and mixture of gases, eliminating one of the explosive dangers in use of a regulator.

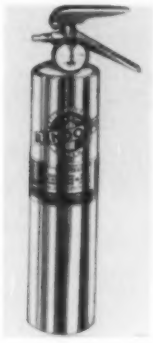
A safety inlet connector fits the inlet connection to the regulator, encouraging quick repair of damaged connections without special tools, resulting in safer use. The Saf-T-Pak regulator is available for use with oxygen, acetylene and LP gases.

DRY CHEMICAL EXTINGUISHER COAST-GUARD APPROVED

(Use Key # 631 on Inquiry Card on page 1)

A NEW 2½ pound chrome-plated dry chemical fire extinguisher, approved by the U. S. Coast Guard and Underwriters' Laboratories, has been announced by Randolph Laboratories, Inc. Equipped with marine bracket, the unit has a copper and nickel undercoat and polished chrome finish, eliminating rust spots or paint chipping.

Model V-2½ stops a ten-square foot fire in 7 seconds. The extinguisher is waterproof, non-toxic, non-freezing. Equipped

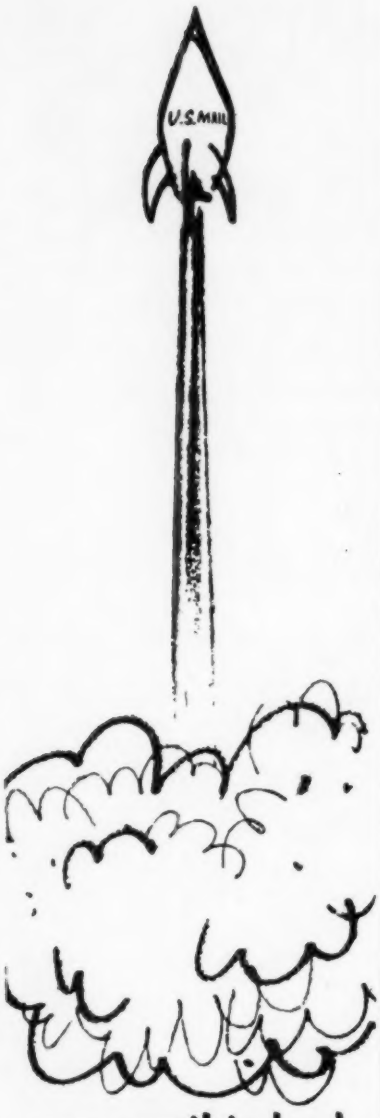


with gauge, it is easily filled with air or nitrogen. The unit, which is 15 inches high fits all carbon tet brackets already installed. Approved for boats, school buses, welding carts, docks, factories and shops.

LIGHTER HYDRAULIC RESCUE KIT

(Use Key # 632 on Inquiry Card on page 1)

A LIGHTER, highly portable hydraulic rescue kit, the RK-1, has been developed by H. K. Porter, Inc., for much emergency rescue work where heavier equipment is not required. The kit, which can be used in narrow and hard-to-reach spots, quickly and efficiently, includes a 4-ton jack; an all-position ram; a chain-pull kit; Bite-Tite clamps; spreaders; fast assembling tubing; special push plate and ram base, etc. The versatile unit can be used for heavy pushing, pulling, lifting, pressing, spreading or bending in maintenance, demolition and emergency rescue work.



zone mail indeed results in speed

The Post Office has divided 106 cities into postal delivery zones to speed mail delivery. Be sure to include zone number when writing to these cities; be sure to include *your* zone number in *your* return address — after the city, before the state.

Index to Advertisers and their Agencies

Babbitt Steam Specialty Co.	42	George T. Metcalf Co., Providence
Bausch & Lomb Optical Co.	Inside Front Cover	Ed Wolff & Associates, Rochester
Carpenter Manufacturing Co.	29	Albert Frank-Guenther Law, Inc., Boston
Chicago Eye Shield Co.	7	Reincke, Meyer & Finn, Inc., Chicago
Coppus Engineering Corp.	47	James Thomas Chirurg Co., Chestnut Hill
Cover, H. S.	47	MacDonald-Cook Co., South Bend
Federal Sign & Signal Corp.	39	C. Jackson Associates, Wilmette
General Radio Co.	Inside Back Cover	K. E. Morang Co., Boston
Haws Drinking Faucet Co.	57	Pacific Advertising Staff, Oakland
Hynson, Westcott & Dunning, Inc.	Back Cover	
Justrite Manufacturing Co.	6	Allan Marin & Associates, Inc., Chicago
Rose Manufacturing Co.	59	Harold Walter Clark, Inc., Denver
Stonehouse Signs, Inc.	5	Rippey, Henderson Bucknum & Co., Denver
Washington Products Co.	27	Wheeler, Kight & Gainey, Inc., Columbus
Watchemoket Optical Co.	51	Darrell Prutzman Associates, Providence
Wilkins Co., Inc.	23	Laux Advertising, Inc., Ithaca
Williams Jewelry & Mfg. Co.	29	Vernon S. Weiler Advertising, Chicago

COUNTERDOSES—For Poisoning and Overdoses

Don't Throw This Away, This Could Save A LIFE

DO THIS FIRST

- Send for a doctor immediately.
- Keep the patient warm.
- Determine if patient has taken
  (1) A POISON: something not meant to be taken internally . . . . or
  (2) AN OVERDOSE: a food or drug taken in excessive quantity.
- While waiting for physician, give appropriate counterdose below.
- But do not force any liquids on the patient—if he is unconscious.

POISONS

Acids - 18
Antifreeze - 9
Bichloride of Mercury - 12
Camphor - 1
Carbon Monoxide - 16
Chlorine Bleach - 8
Cleaning Fluids - 17
Disinfectant
  with chlorine - 8
  with carbolic acid - 6
Food Poisoning - 11
Gasoline, Kerosene --17
Insect & Rat Poisons
  with arsenic - 2
  with sodium fluoride - 14
  with phosphorus - 5
  with DDT - 11
  with strychnine - 15
Iodine Tincture - 4
Lye - 10
Mushrooms - 11
Oil of Wintergreen - 9
Paint (Lead) - 11
Powder From Broken
  Fluorescent Tubes - 1
Rubbing Alcohol - 9
Turpentine - 17
Washing Soda - 10

OVERDOSES

Alcohol - 9
Barbiturates - 3
Belladonna - 15
Bromides - 11
Codeine - 13
Headache & Cold
  Compounds - 9
  Salicylates (aspirin) - 9
Morphine, Opium - 13
Paregoric - 13
'Pep' Medicines - 2
Sleeping Medicines - 3

To Find the Correct Counterdose

- In one of the lists printed at left, find substance causing the trouble.
- Next to that substance is a number. This refers to counterdose bearing same number in the section below.

1
Induce vomiting with an emetic such as
- Tablespoon of mustard, or
- Soap & warm water, or
- Salt & warm water, or
- Finger in throat.

2
- Give a mixture of 2 tablespoons of powdered burnt toast,
  1 spoon milk of magnesia,
  4 spoons strong tea.
- Induce vomiting. (See #1)

3
- Give mixture as in #2.
- Induce vomiting. (See #1)
- Give 2 tablespoons epsom salt in 2 glasses of water
- Then give large quantities of hot coffee or strong tea.

4
- Give 2 ozs. thick starch paste —made by mixing cornstarch & water.
- Then give 2 ozs. salt in quart of warm water. Drink until vomit fluid is clear.
- Finally, give glass of milk.

5
- 4 oz. hydrogen peroxide.
- 1 tablespoon sodium bicarb in quart of warm water.
- Then give 4 oz. mineral oil. Positively do NOT take vegetable or animal oil.
- Induce vomiting. (See #1)

6
- Give 2 tablespoons whiskey in 8 spoons warm water.
- Next give glass of milk or whites of 2 eggs.
- Then give hot tea or strong coffee.

7
- Give mixture as in #2.
- Induce vomiting. (See #1)
- Tablespoon sodium bicarb in quart of warm water.
- Give 2 tablespoons epsom salt in pint of water.

8
- Give 1 teaspoon of aromatic spirit of ammonia in glass of water.
- Hot coffee or strong tea plus egg white.

9
- Give mixtures as in #2.
- Induce vomiting. (See #1)
- Give tablespoon of sodium bicarb in quart of warm water.
- Give strong tea or coffee.

10
- Give 2 tablespoons vinegar in 2 glasses of water.
- Then give white of 2 eggs or 2 ozs. of olive oil.
- Do NOT induce vomiting!

11
- Induce vomiting. (See #1)
- Give 2 tablespoons epsom salt in 2 glasses of water.
- Then give large quantities of hot coffee or strong tea.

12
- For each tablet swallowed give white of 2 eggs in glass of milk.
- Give mixture as in #2.
- 1 oz. epsom in pint water.

13
- Give mixture as in #2.
- 2 tablespoons epsom salt in 2 glasses of water.
- Keep patient awake.

14
- Give 2 tablespoons of milk of magnesia.
- Give glass of milk.
- Induce vomiting. (See #1)

15
- Give mixture as in #2.
- Induce vomiting. (See #1)
- Give artificial respiration if necessary.

16
- Rush victim into fresh air.
- Make patient lie down.
- Hot coffee or strong tea.

17
- Induce vomiting. (See #1)
- Give 4 oz. mineral oil.
- Hot coffee or strong tea.

18
- Give 1 oz. milk of magnesia in large quantity of water.
- Do NOT induce vomiting!

A LIST OF COUNTERDOSES

FOR COMMON POISONS AND OVERDOSES

IS PRINTED

ON THE OTHER SIDE

OF THIS PAGE

CUT OUT and POST IT

At Your

FIRST AID STATION

Have you thought about NOISE CONTROL lately?

Have your employees been complaining about excessive noise? Does this noise create a potential hearing hazard?

It's time to study such matters with the aid of a General Radio Type 1555-A Sound Survey Meter. This handy, versatile instrument can help you determine the extent of your noise problems.

Features Designed with You in Mind:

- ★ Rugged and light in weight (only 1 lb. 14 oz. with batteries).
- ★ Held easily in one hand with controls at your fingertips.
- ★ Overall sound level range from 40 to 136 db.
- ★ Easily operated by non-technical personnel.
- ★ Backed up by General Radio's 2-Year Warranty

Write or Call for more information

Type 1555-A
Sound Survey Meter — $150
Leather carrying case — $10

GENERAL RADIO COMPANY

WEST CONCORD, MASSACHUSETTS

NEW YORK, WOrth 4-2722 District Office in Ridgefield, N. J. WHitney 3-3140	CHICAGO Oak Park Village 8-9400	PHILADELPHIA Abington HAncock 4-7419	WASHINGTON, D.C. Silver Spring JUniper 5-1088	SAN FRANCISCO Los Altos WHitecliff 8-8233	LOS ANGELES Los Angeles HOllywood 9-6201	IN CANADA Toronto CHerry 6-2171

(For details, use Key # O-16 on card on page 1)

UNIVERSITY MICROFILMS, INC.
ATTN. EDITORIAL DEPT.
313 N. FIRST STREET
ANN ARBOR 12-60
MICHIGAN ECK SNP

for
fever blisters
and
canker sores of
herpetic origin . . .

LACTINEX®

Mixed culture of Lactobacillus acido[illegible]d bulgaricus with metabolic enzymes naturally produced.

ALSO SUCCESSFUL CLINICAL RESULTS IN DIARRHEAS . . .

Lactinex is effective in uncomplicated diarrhea, including that resulting from antibiotic therapy.[1]

Weekes[2] reports successful treatment with Lactinex of fever blisters and canker sores of herpetic origin.

SUPPLIED: *Tablets in bottles of fifty; Granules in boxes of twelve one gram packets.*

1. Siver, R.H.: Current Medical Digest, Vol. XXI, September 1954.

2. Weekes, D.J.: New York State Journal of Medicine, Vol. 58, August 1958.

HWD

HYNSON, WESTCOTT & DUNNING, INC.

BALTIMORE 1, MD.

(For details, use Key # O-17 on card on page 1)